HAASIANA

A BIENNIAL NEWSLETTER OF THE NATIONAL NATURAL HISTORY COLLECTIONS OF THE HEBREW UNIVERSITY

No. 7

Jerusalem, April 2014

Compiled and edited by M.N. Ben-Eliahu and D. Golani

The Biological Collections of the Hebrew University of Jerusalem
The Berman-Lubin Buildings, Edmond Safra Campus
Givat Ram, 91904 Jerusalem, Israel

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Cover photograph of Northern bald ibises (*Geronticus eremita*) collected by Israel Aharoni on 1910 in the Syrian Desert near Palmyra. In 2002, a tiny population of this critically endangered species was rediscovered in Syria in the exact same location described by Aharoni, but has since become extinct. Cover photograph from the collections of Israel Aharoni at the Hebrew University of Jerusalem reviewed by Dr. Nir Sapir.

Contributions appearing in the newsletter should be considered as preliminary notes that have not been peer-reviewed.

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Contents

From the Director

Once again, I welcome our readers and colleagues to this latest edition of Haasiana. As usual Haasiana is both a summary of two years of activity and a focus on one or more of the collections in Jerusalem. The main subject of this year's issue is the ornithology collection and the Aharoni collection (named after the first Hebrew Israeli zoologist). Haasiana also records the changes that occur in the Scientific Collections, and this year we particularly happy to welcome Dr. Efrat Gavish, an arachnologist who continues with the research of the late Dr. Gershom Levy on spiders, scorpions, and various other species.

We also continue with the documentation of the fauna and flora of Israel and the Middle East, together with colleagues in Israel and abroad. We are also continuing the digitalization of the collection databases in an updated new format, starting with the Reptiles Collection, but with plans to continue with the larger collections. The contributions of Dr Nir Sapir, Adi-Ben Nun and Gali Beiner have been particularly important in this new digitization project.

Prior to publication of this issue of Haasiana (but after its preparation and editing had been completed), we were deeply saddened to learn of the death of Dr. Nechama Ben-Eliyahu, our esteemed colleague and friend. Together with Dr. Daniel Golani, Dr. Ben-Eliyahu co-edited the Haasiana issues for many years. Dr. Ben-Eliyahu's many contributions to the Scientific Collections and her extensive research on Polychaeta, etc., will be presented in a future issue of Haasiana. In addition, we sadly noted the passing of Ms. Revital Kashi who worked in the past on computerization of the collection databases.

This year we welcomed Dr. Ariel Chipman in the new role of Acting Manager of the Scientific Collections whilst I was on sabbatical for eight months. Ariel's work during these months has been a inspiration and evidence of the growth and renewal that takes place within the collections

Prof. Alan Matthews, Director

From the Coordinator of the Collections

The biennial newsletter Haasiana reports updates of the ongoing activities of the National Natural History Collections of the Hebrew University. This newsletter is named after the late Professor Georg Haas who was instrumental in establishing the scientific fields of Zoology, Paleontology and Natural History in Israel. Haasiana was first published in 1995 and since 2002 is has appeared every other year. Each issue of Haasiana includes the reports of each scientific collection, including recent activities of the collection staff during the previous two years. Each issue of Haasiana focuses on one particular collection and presents its salient projects in greater depth. The present issue focuses on the collection of the late Professor Israel Aharoni, in which were preserved specimens of many taxa of fauna; this essay was written by Dr. Nir Sapir. The last few years have seen a closer cooperation between the Collections and the Department of Ecology, Evolution and Behavior. A reassessment of areas and their purposes has been accomplished, which will benefit all. During 2013, a study room serving all the collections was designated. The room holds literature of all the collections.

The Staff of the Collections received with great sorrow the sad news of the death of Ms. Revital Kashi, who had worked with the late Dr. Shoshana Ashkenazi, who had been the head of the computerization project of the Scientific Collections. The Staff of the Collections have continued to receive the excellent assistance and support of computer scientists Adi Ben-Nun and David Shohami and of Ms. Sarit Levi from the secretariat of the Department of Ecology, Evolution and Behavior. The staff members of the Collections thanks them for their cooperation and technical problem solving. Special thanks go to Dr. Nechama Ben-Eliahu for editorial assistance in the writing, editing and style quality of many issues of Haasiana.

Dr. Daniel Golani
Coordinator of the National Natural History Collections

II. The Bird Collection, including the collection of Israel Aharoni. . . . . .

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Associated Researchers
Ron Efrat

The bird collection of the Hebrew University of Jerusalem was founded by Prof. I Aharoni (1882 – 1946; Fig. 1), containing specimens collected since 1906, before the establishment of the Hebrew University in 1925. Aharoni was an avid naturalist and a multi-lingual expert in near east and other (e.g., East European) languages. In his autobiographic book, "The Memories of a Hebrew Zoologist" (1943), he stated that "Even before my arrival to the land of Israel, my double life-long goal was clear to me: a) The study of wild animals in their natural habitat, in the birth place of each one of them, and b) The study of the original name of each creature, whom the desert dwellers (who live on their hunting and did not change their culture and way of life since the days of "Abraham" our father) are calling each living animal known to them". Since his immigration to Israel in 1902, Aharoni travelled many times throughout the entire area between areas that are currently found within the borders of Israel, Jordan, Turkey, Iraq, and Saudi Arabia, to research the region's wildlife. During his numerous expeditions throughout the Middle East, he collected specimens for different animal collections and gained expertise in the study of the region's animals.

Fig. 1. Prof. Israel Aharoni.

Aharoni was responsible for important zoological discoveries, specifically (but not limited to) the region's avifauna. Aharoni collected many Northern Bald Ibises (*Geronticus eremita*) discovered in the Syrian Desert. This species is nowadays at the brink of extinction, surviving in the wild only in two locations: in southeastern Turkey under a semi-natural setting (the birds are captured during winter to reduce their mortality), and in southern Morocco in several colonies consisting of about 500 birds (http://www.birdlife.org/datazone/speciesfactsheet.php?id=3791). In 2002, a tiny population of less than ten individuals was located in the Syrian desert in the exact same locations where Aharoni had traced the birds a hundred years ago (Serra et al. 2004). Yet, since this re-discovery, the population has further declined and is now believed to have become extinct (http://www.surfbirds.com/birdingmail/Mail/MEBirdNet/1410003?year=2013

Aharoni was also the first to find the Thick-billed Lark (*Rhamphocoris clotbey*) in the Syrian Desert, as the species was documented earlier only in Africa, throughout the Sahara Desert. Another important desert inhabitant that was rapidly declining during the 19th century and the start of the 20th century is the Arabian Ostrich (*Struthio camelus syriacus*), a currently extinct subspecies of the Ostrich. This form was once wide-spread in the Middle East's deserts, including in Israel, but hunting caused its decline in the area until it became extinct. This relatively small-sized sub-species had several unique characteristics separating it from the other subspecies, among which, Aharoni described the differences in the characteristics of its egg (Aharoni 1943).

When the Hebrew University of Jerusalem was founded, Aharoni was already a renowned teacher and scientist and, consequently, he became one of the first professors of the newly established university. He founded a collection that was meant to become a zoological museum of local wildlife at the university's campus in Mt. Scopus. Aharoni wrote several books for students of zoology, providing important contribution to the development of the study of local zoology. His autobiographic book provides ample information about his teaching and, especially, his expeditions in the Middle East, as well as a rich description of different aspects of his personal life during several decades since his immigration to Israel. His animal collection was maintained by himself with the help of his daughter, Bat-Sheva Aharoni, a scientist in her own right (Fig. 2).

After his death in 1946, there were hardly any new specimens collected for the collection over a period of about twenty year, until the second half of the 1960's, after the six-day war in 1967. Since then, many specimens were collected by Uriel Safriel and his students, as well as by other people that found dead birds in the field. The birds were mainly from areas west of the Suez Canal, the Sinai Peninsula, and Eilat, with the latest specimen in the collection dated 1982. In Figure 3, we describe the frequency distribution of the specimen collection from 1906 till 1982, the period during which collection of specimens took place (see Fig. 3).

Fig.. 2. Prof. Aharoni and his daughter, Dr. Bat-Sheva Aharoni in the collection hall at Mt. Scopus campus of the Hebrew University of Jerusalem

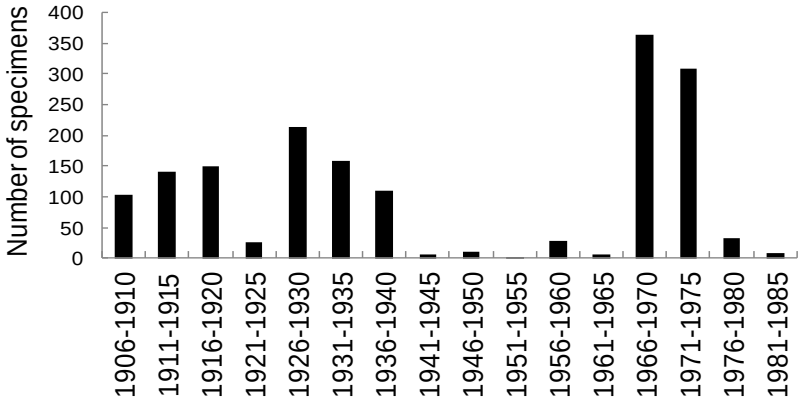

Fig. 3. The frequency distribution of specimen collection times of the Bird Collection, the National Natural History Collections, Note that an additional 476 specimens for which the year of collection is unknown are also included in the collection; this number is expected to substantially decrease following a forthcoming review of their particulars

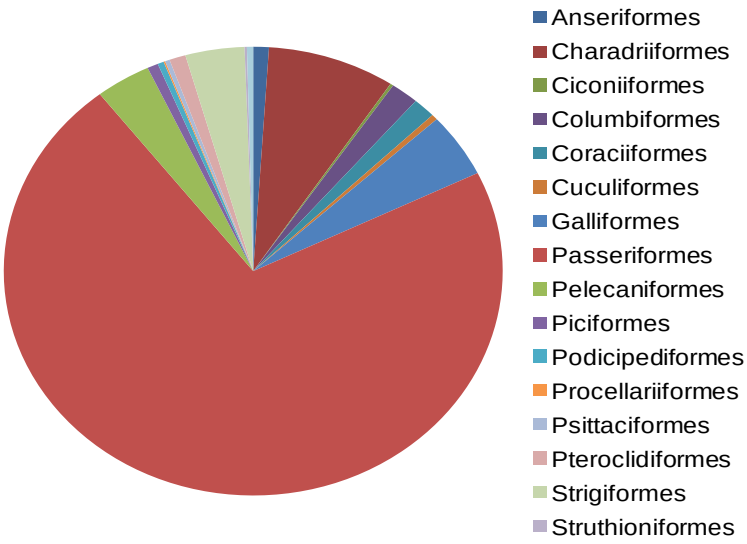

Fig. 4 describes the composition of the collection, by providing the proportion of the specimens in each of the sixteen avian orders. In Figure 5, we depict the proportion of specimens collected from different geographical areas.

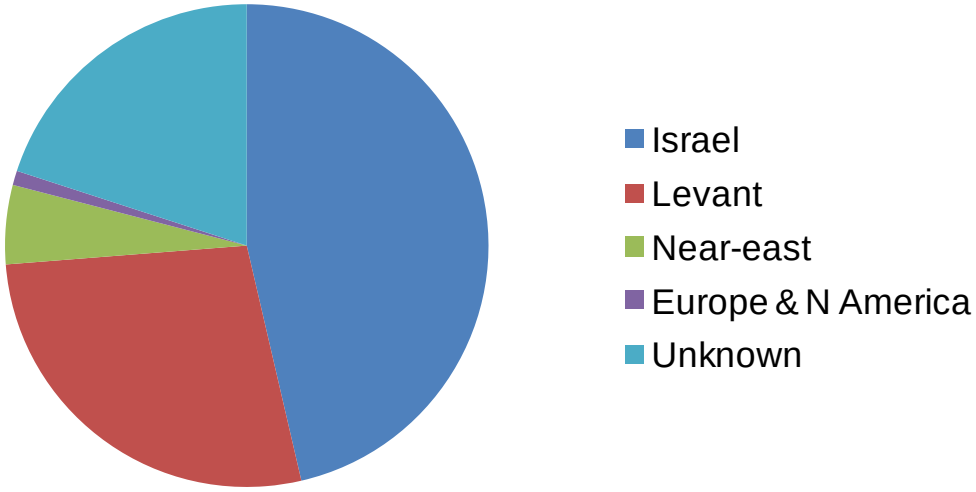

Fig. 5. The frequency distribution of specimens in relation to country of collection of the Bird Collection, the National Natural History Collections, The Hebrew University of Jerusalem. Note the large number of specimens of which their country of collection is currently unknown; this number is expected to substantially decrease following a forthcoming review of their details.

At some unknown time after the Six-Days War, the collection was moved from the Mt. Scopus campus to Givat Ram (now the Edmond J. Safra) campus and was stored in a basement. Several years ago, a suitable storage place for the collection was obtained and, since July 2012, the collection is stored in a designated room in Lubin building. During the transfer of the collection to its new location, the collection specimens were catalogued, their identifications were reviewed and their physical state of preservation was assessed in order to create a list of specimen-preservation

priorities. The collection was treated with pesticide and most of the collection material is presently stored in metal drawers and cabinets.. Very large specimens that could not be stored within cabinets, including Griffon Vultures (*Gyps fulvus*), Great white pelicans (*Pelecanus onocrotalus*) and Arabian Ostriches (*Struthio camelus syriacus*) were placed on top of cabinets (Fig. 6).

Fig. 6. Large bird specimens in the new collection hall of the Bird Collection, the National Natural History Collections. From left to right: Arabian Ostrich (*Struthio camelus syriacus*), Griffon vulture (*Gyps fulvus*), Great white pelican (*Pelecanus onocrotalus*), and Eurasian eagle owl (*Bubo bubo*).

The collection is presently used for research (by N. S.) on bird functional morphology, in order to assess contributing factors and interrelationships of morphological fluctuating asymmetry indices in birds. For this study, bird biometrics are taken from selected bird groups. In addition, the collection specimens are used for teaching in the course "Ecology, Evolution and Behavior of Birds". Specimens are used to teach the students about different bird species in Israel, as a preparation for field work and for their general knowledge. Our future plans include a continuous expansion of the collection, and we expect to re-start collecting specimens during the coming year (2014), with a first specimen, a Barn owl (*Tyto alba*), that happened to be found dead by Ms. Rivka Biton in the court of Berman building in the Edmond J. Safra campus during November, 2013. We plan to advertise the collection among bird researchers in Israel and abroad in order to encourage the work on the collection, and will be happy to facilitate visits to the collection for interested researchers. In addition, a plan has been set to renovate the room adjacent to the collection hall, and to use it as an interactive class and exhibition room that will be devoted to teaching about the National Natural History Collections of the Hebrew University of Jerusalem.

The collection currently contains 2,040 specimens, some of which are of particular interest:
1. Arabian ostrich (*Struthio camelus syriacus*) – a female and two chicks, representing the remains of the once wide-spread population of this sub-species, were collected by I. Aharoni in northern Saudi Arabia, about 500 km east of Israel, on March 27, 1927 (Shirihai 1996). Due to the poor physical condition of these specimens, they are ranked among the highest priority for preservation and restoration.

2-Levant Darter (*Anhinga rufa chantrei*) – birds of this distinct Middle Eastern subspecies of the African Darter inhabited the Lake of Antioch (or Lake Amik) in southeastern Turkey until its drainage from the 1930's onward which led to the extinction of this population. Darters of this sub-species were seen in the swamps of southeastern Iraq at least until the 1990s', but the population's current status is unclear and it (and consequently the subspecies) might have become completely extinct nowadays. Aharoni described Darters from the Lake of Antioch during the breeding season, and the species was also known to visit the Hula Lake of northeastern Palestine and other wetlands in the north and coastal plains of Palestine during wintertime. The species was last seen in the Israel in the winter of 1957 in the Hula Valley (Shirihai 1996), with a more recent observation in the Sea of Galilee (Lake Kinneret) on 31st May 2004 (http://www.israbirding.com/irdc/bulletins/bulletin_5/). Aharoni and his fellow collector Yehezkel Hankin collected a total of 24 individuals, including chicks, from the Lake of Antioch.

3-Purple swamp-hen (*Porphyrio porphyrio*) – The swamp-hen is another species inhabiting the Lake of Antioch, and the form that existed there was of one of the Western Asian sub-species *caspius* or *seistanicus* . Seventeen specimens were obtained by Aharoni from the lake. Almost all the records of the species in Israel are of birds of the African sub-species, *P. p. madagascariensis*, likely originating from the Egyptian population. A single bird apparently exhibiting characteristics of the *caspius/seistanicus* subspecies was recorded in the Golan Heights on July 11, 1999 (http://www.israbirding.com/irdc/bulletins/bulletin_2-2/). The separation between these two sub-species is difficult and their current distribution in our region is unclear.

4- Northern Bald Ibis *(Geronticus eremite*) – Twenty specimens are present` in the collection from the expeditions of Aharoni to the Syrian Desert. These include adults and chicks that were collected in the field and at the nests. These collections, and other collections of many individuals from this population to other bird collections, have probably contributed to the grim destiny of this population and species.

5- Carrion crow (*Corvus corone*) – a single specimen, collected in Jerusalem on 15th of February, 1907 represents the only record of this species in the country. It is not clear, though, whether this specimen represents an escapee or another case of unnatural human-related occurrence, as the details of the collection are unknown. This specimen will be further examined in the near future to ascertain its identity, in a hope to shed light on the species' status in Israel.

An important aspect that can be examined using the long-term bird collection is the dynamics of habitats suitable for different species, deduced from the locations of collected specimens. An obvious example of such dynamics is the change of habitat suitability for steppe and desert species in western Israel, specifically along the plains

of central and south Israel, located about 10 to 25 km from the shoreline. Aharoni collected many steppe and desert species in the area of Rehovot, Eqron and Hulda. These include the MacQueen's Bustard (*Chlamydotis macqueenii*), formerly known as the Hubara bustard, the Saker Falcon (*Falco cherrug*), the Sociable Lapwing (*Vanellus gregarius*), the Desert Finch (*Rhodospiza obsoleta*), and the Lesser Short-toed Lark (*Calandrella rufescens*). These species are extremely rare or have not appeared at all in this area for many decades, and inhabit areas found in the northern Negev, about 60 – 100 kilometers to the south. Many of these species, specifically the non-passerines, have also become much rarer than in the days of Aharoni, likely due to different anthropogenic disturbances such as hunting and habitat alterations. The c urrent habitat associations of the above-mentioned species suggest a strong steppe and desert habitat affinity, and we may therefore conclude that the area of Rehovot and Hulda was once similar in its physiognomic characteristics to current characteristics of the area found west of Be'er-Sheva, containing open, semi-arid, agricultural and shrub-steppe plains with scattered vegetation. A different explanation is that bird populations inhabiting this area became extinct due to human activities such as hunting, habitat destruction due to intense farming and poisoning, while those of the northwestern Negev did not.

The bird collection of the Hebrew University of Jerusalem, founded by Prof. Israel Aharoni, represents a unique source of knowledge of the birds of the Middle East, especially during the first third of the 20th century. The collection, which has been maintained under poor storage conditions for decades, is currently stored within new cabinets under stable temperature conditions in a designated room in the Lubin Building. We welcome researchers interested in studying the collection specimens. The planned development of the collection and its expected expansion in the future will surely re-establish its status as one of the leading bird collections of the nation and the entire region.

ACKNOWLEDGEMENTS
We would like to thank all the people involved with the planning, execution and construction of the new collection home in Lubin Building. Specifically, we would like to thanks Gali Beiner, Dr. Rivka Rabinovitz, Sarit Levy, Orna Bar and Dr. Ya'acov Nisenbaum for their important help.

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III. THE BIOLOGICAL COLLECTIONS
III-1. THE HERBARIUM[1]

Staff
Dr. J. Ziffer-Berger, Head of the Herbarium, <jotham.z@gmail.com>
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H.V. Leschner, M.Sc., Collection Manager, <hagarv@savion.huji.ac.il>

Associated Researchers
Dr. M. Avishai (The Botanical Garden)
Prof. A. Danin (Emeritus)
Dr. O. Fragman-Sapir (The Botanical Garden)
Dr. D. Heller (Emeritus)
Dr. Y. Melamed (Bar-Ilan University)
Prof. U. Plitmann (Emeritus)
Dr. E. Ramon
Prof. A. Shmida

Introduction/General remarks
The Herbarium of the Hebrew University comprises some 800,000 specimens of vascular plants, bryphytes, algae and fungi. It currently cooperates with ca. 30 other institutions throughout the world on identification of problematic groups (e.g., *Juniperus*, *Picris*, *Ambrosia*, *Cyperus*, Pteridiophyta), loans, exchanges and gift material; and serves as a research platform for scientists, reference and documentations center, preservation of nature, and teaching tool for university courses as well as other courses. In addition to academic institutions, it also serves as the reference and documentation center for the Israel Gene Bank, Israel Ministry of Agriculture, and provides taxonomic guidance to many institutions.

Structure of the Herbarium collections
The collections at the Herbarium comprise ca. 700,000 specimens subdivided into the following sections:

- Plants of Israel, the Middle East and the Mediterranean region, comprising ca. 400,000 specimens of vascular plants
- Worldwide reference plant collection
- Cultivated plants of Israel
- Bryophytes
- Algae (mainly marine)
- Fungi (mainly plant pathogens)
- The vascular plants collection of A. Aaronsohn
- The Scandinavian vascular plants collection of S. Johansson
- The medicinal plants collection of D.V. Zaitschek
- Voucher specimens of the Israel Gene Bank
- The seed collection (mainly *Leguminosae*)
- The collection of wood sections of Prof. A. Fahn

[1] This report on the Herbarium was written by **H.V. Leschner** & **Dr. J. Ziffer-Berger.**

The Herbarium library
The Herbarium library comprises ca. 4,300 books and microfiches, and about 120 periodicals. The library is a branch of the Harman Library.

- Voucher specimens of the Israel Gene Bank
- The seed collection (mainly *Leguminosae*)
- The collection of wood sections of Prof. A. Fahn

Acquisitions in 2012–2013
Some 5,000 new specimens, mainly of rare and protected plants from Israel acquired from various sources, and ca. 500 voucher specimens of the Israeli Gene Bank.

Activities

AAR Herbarium
This past year, the flag curation project of upgrading, digitizing, and publicizing of the Aaron Aaronsohn Herbarium (**AAR**) - the oldest Israeli plant collection, is on way. Thus far, we finalized upgrading and digitizing major tree genera in **AAR** collections from our own funds, including pines, oaks, and terebinths. This project awaits further funding, preferably from national entities, due to its national importance.

Cataloging of the Collection
Computerized cataloging and verification of the Herbarium collection has been carried out in stages since 1998. The first stage focused on the plants of Israel and Mt. Hermon, comprising some 300,000 specimens. About 60,000 specimens of vascular plants were verified and cataloged during the first phase in the years between 1998 and 2003. In the recent stage, 2008-2013, the computerization efforts focused on all taxa which are currently under research, and some 4,000 specimens were cataloged in this stage, including voucher specimens of the Israel Gene Bank and:

- **Vascular plants**: About 3000 specimens of taxa which are under current research were catalogued in 2012–2013: *Raphanus*, *Alyssum*, *Nigella*, *Picris*, *Ranunculus* (**Dr. J. Ziffer-Berger**); *Quercus* and *Iris* (**Dr. M. Avishai**); *Colchicum*, *Crocus*, *Allium* **(Dr. O. Fragman-Sapir** - The Botanical Garden at Givat Ram); Chenopodiaceae, *Portulaca* **(Prof. A. Danin**); Chenopodiaceae, mainly *Atriplex* (**Dr. A. Sukhorukov** - Moscow University). Further specimens, mainly rare plants, were catalogued upon determination.
- **Bryophytes**: **Dr. I. Herrnstadt-Haas** continues identifying undetermined specimens of Israel and the adjacent regions. Apart from the taxonomic and ecological data, the data comprise a full record of the geographic distribution of Israel's Bryophytes. The computerization of the Bryophytes continues as specimens are verified.

The Israel Gene Bank, Ministry of Agriculture
The Israel Gene Bank is an ongoing project carried out by the Ministry of Agriculture in the Volcani Institute, Bet Dagan with the Herbarium in cooperation with the Millenium Gene Bank in England. It aims to preserve the genetic varieties of wild progenitors and wild relatives of cultivated plants, as well as traditional food crops; and the genetic variety of Israeli wild flora. With respect to this project, the Herbarium

acts as a reference collection, a documentation center, and a guidance center for the collectors.

The voucher specimens of the Gene Bank are verified, mounted and deposited in the Herbarium. Processing of about 500 voucher specimens was completed during 2011–2013, mostly by **Ms. D. Assaf**. The project is funded by a grant from the Ministry of Agriculture.

List of names of the wild plants of Israel
A new updated list of the names of Israel's wild plants (ca. 3,000 species) which was created in the year 2011 was made available to all the academic institutions of Israel, the Israeli Gene Bank, the Volcani Institute, the Ministry of Agriculture and others. The list contains updated scientific name, synonyms, Hebrew names and common names. The list is currently updated and revised, and as work on the new edittion of Flora Palaestina continues.

Research projects

Systematic work
The systematic work in the Herbarium deals with the description of new taxa and the revision of existing ones, using herbarium specimens and the library.

- **Dr. J. Ziffer-Berger** and **Dr. Oz Barazani** (Volcani Institute) started a research on molecular analysis of genetic variation in *Diplotaxis harra* and *Brassica tournefortii* (Brassicaceae) in order to create a method of collecting seeds for optimalized representation of genetic diversity.

- **Dr. J. Ziffer-Berger** is currently working on revision of Cruciferae (Brassicaceae), particularly on the genera ***Raphanus*** (Brassicaceae), ***Quidproquo*** (Brassicaceae), and ***Picris*** (Asteraceae).

- A joint project of the Herbarium and the **Slovak Academy of Sciences** on the genus ***Picris*** (**Compositae** – The Daisy family) was initiated two years ago. The Slovak colleagues **Dr. Jaromir Kučera** and **Dr. Marek Slovak** came for a 10-day visit during the spring 2012 to collect *Crepis* specimens for a phylogenetic analysis of the genus. This year we retributed a 7-day visit to the Slovak Academy of Sciences and discussed the future of our joint project. The phylogenetic analyses are currently taking place.

- Herbarium specimen survey to clarify taxonomic confusion within annual buttercups (***Ranunculus*** sect. *Echinella, R. Cornutus* complex). A small group of very similar species of yellow annual buttercups causes a nomenclatural confusion. This year the herbarium team is reviewing all herbarium specimens and comparing them with loans from other countries. The survery has been completed and contributed a new concept in the circumscription of species in this taxonomic group. We additionally typified much of the taxa. Two new type specimens were added to our collection as a result of this study.

- **Dr. M. Avishai** – **t**he Mediterranean species of the genus ***Quercus*****.**

- **Prof. A. Danin** – flowering plants of Israel and Jordan, currently working on revision of the genera ***Portulaca*** and ***Capparis*****.**

- **Dr. O. Fragman-Sapir** – revising the Genus ***Silene*** **i**n the Middle East; **Liliales** of Israel and adjacent countries; endangered species of Israel.

- **Dr. D. Heller** – **Leguminosae**; Flora Palaestina.

- **Dr. Y. Melamed** – Archaeobotany; Carpology; Utility plants. Dr. Melamed studies the wild relatives of the cultivated **Legumes** of the Levant.

- **Prof. U. Plitmann** – taxonomy of **flowering plants; utility plants**.

- **Prof. A. Shmida** – **Rare plants** of Israel; flora of Jordan; pollination mechanisms.

- **Dr. Sukhurakov** of the Moscow herbarium reviewed our Chenopodiaceae, mainly the genera ***Chenopodium***, ***Atriplex*** and ***Salsola***.

Eco-Forestry project

- **Dr. J. Ziffer-Berger** conducted a 3-year research on the regeneration of ***Cupressus sempervirens*** in the reforestation projects of the Jewish National Fund (Keren Kayemet LeYisrael) forests in Israel, finalized this year. This is a joint project with Dr. Y. Osem of the Volcani Institute.
- **Dr. J. Ziffer-Berger and Hagar Leschner** together with Ailon Calev from the JNF are currently cataloguing the trees of Illanot National Arboretum.

Flora projects

- The new edition of **the Conspectus Florae Orientalis Series,** edited by **Dr. D. Heller,** is in press; published by the Israel Academy of Sciences Humanities. The new edition comprises a hardcover book and CD.
- Work on a revised online edition of the **Flora Palaestina** began in 2009. The first volume of this monolithic work of the late professorss **M. Zohary** and **N. Feinbrun-Dothan.** Flora Palaestina, was published by the Israel Academy of Sciences and Humanities in 1966 and the last (fourth) volume in 1986, nearly 25 years ago. Since then, many species have been discovered and described and the systematics of the plant world has undergone major changes, requiring a revision. The editorial board of the revision comprises **A. Danin, D. Heller, O. Fragman-Sapir, M. Kislev, H. Leschner, H.** and **U. Plitmann. Dr. J. Ziffer-Berger** is also participating. The first part, **Part 1. Ferns, Gymnosperms, Angiosperms: Salicaceae – Chenopodiaceae,** is accessible online as separate entries for each taxon at <http://www.tropicos.org/Project/Palaestina>.
- **Prof. A. Shmida** is currently working with **Prof. R. Prasse** of Hannover University, Germany, on updating the flora of Jordan. Plants collected in

Jordan are compared with the existing herbarium specimens and incorporated into the main collection of the Herbarium.

Cooperation with other projects and institutes

The Herbarium of the Hebrew University, the only scientific botanical collection in an academic institution in Israel, is used by scientists from many other institutions as a source of botanical knowledge and advice. To name a few:

- Fungi from the Herbarium are used for a joint project of the Institute of Evolution in Haifa University and the University of Kiev, Ukraine.
- Researchers of The Rare Plants Survey conducted by the NPA (Israel Nature and Parks Authority) consult the herbarium specimens and staff.

Participation in international activities

- Members of the Herbarium staff and associate researchers are active in OPTIMA (the Organization of the Phyto-Taxonomic Investigation of the Mediterranean Area) meetings and field excursions on a regular basis. **Ms. H.V. Leschner,** the Collection Manager of the herbarium, participated the last meetin in Palermo, Sicily, Italy.
- Biosyst.EU conference, University of Vienna. **J. Ziffer-Berger:** Patterns of endemism of the Southern Atlantic forest of Brazil: Relicts of a rich past or a contemporary diversification. February 2013.

Visitors to the collection 2012–2013

Prof. S. Abbo, Faculty of Agriculture, The Hebrew University: Legumes, ***Linum*.**

Dr. I. Blecher, Arad: Flowering Plants of the Dead Sea area, scientific drawings of plants.

Dr. M. Blecher, Israel's Authority of Nature Protection and National Parks: Flowering Plants of the Dead Sea area.

Dr. Jean-Marc Dufour-Dror, Jerusalem: invasive plants of Israel.

Dr. O. Fragman-Sapir, The Botanical Garden of Givat-Ram: the genus ***Allium,*** Geophytes of the Middle East, rare plants of Israel.

Prof. E. Gabrielian, Institute of Botany, Armenian Academy of Sciences, Erevan, Armenia: Studies of the genera ***Tamarix***, ***Centaurea*** and ***Ornithogalum*.**

Dr. G. Hartman, Dept. of Anthropology, University of Connecticut, USA: study of Israeli wild plants along precipitation gradient.

Dr. S. Katz, The Hebrew University: history of the University.

Prof. M. Kislev, Bar-Ilan University: Archaeobotany.

Prof. S. L. Mosyakin, Kholodny Inst. id Botany, National Academy of Sciences, Kiev, Ukraine: Selected genera of Chenopodiaceae, Amaranthaceae, Poaceae and Asteraceae.

Mr. T. Naor, Kibbutz Yotvata: **Frankincense.**

Prof. A. al-Oglah, Royal Botanical Garden, Amman, Jordan: Red data book of Jordan.

Prof. R. Prasse, University of Hannover, Germany: Flora of the Middle East.

Dr. Y. Sapir, Botanic Garden, Tel Aviv University: Ecology and Taxonomy of the genus ***Iris***; Ecology and Taxonomy of the genus ***Helianthemum*.**

Mr. A. Shifman, Moshav Merhavia: **Orchidaceae** of the Middle East.

Dr. A. Sukhorukov, Moscow State University, Russia, visited the herbarium twice: **Chenopodiaceae.**

Prof. K. Tielbörger, University of Tübingen, Germany: Flora of the Middle East.

Miss Z. Ugurlu, Hacettepe University, Ankara, Turkey: woody Rosaceae.

Dr. D. Weinstub, Ben Gurion University: Research on the biblibal *Attad*.

Ms. Yif'at Yair, Tel Aviv University: the genus ***Ambrosia*** in Israel.

Wild radish (*Raphanus raphanistrum* L.) grown for phylogenetic research on the genus (phtographed by Maayan Mermelstein)

In Memoriam: **Revital Kashi (1974-2011)**

Revital Kashi, who worked with us in the Hebrew University Nature Collections for nearly 10 years, was a wise, gentle, caring and professional colleague. She began her work in the collections at the Herbarium and later worked with Dr. Shosh Ashkenazi as a data manager in the computerization project of the Hebrew University Nature Collections.

Revital Kashi was born to Ilana and Sasson Kashi on February 18, 1974, in Ramat Gan. When she was two years old, the family moved to Qiryat-Ono where she spent her childhood.

From 1992 to 1994 Revital served in the IDF as a graphic designer. Her graphic and design skills later became an integral part of her work in the Hebrew University.

Revital commenced her studies in Biology at the Hebrew University in 1996 and received her B.Sc. degree in 2000. She then continued studying for her M.Sc. degree on pollination ecology with Prof. Avi Shmida of the ESE Department of the Hebrew University.

During her M.Sc. studies Revital worked as the picture editor of the "Red Data Book of Plants of Israel". Before her untimely death she completed work on the first volume and was in the middle of work on the second volume.

In 2003 Revital began working in the Herbarium as a technician and soon was promoted as data manager with Dr. Shosh Ashkenazi.

Revital Kashi was a brilliant woman, gentle, fine and a professional botanist. She always performed her work in the best manner possible and also in a very quiet and intelligent manner. She was a dear friend and colleague.

In February 2009 Revital had a severe brain hemorrhage from which she never recovered. Revital died on November 6, 2011. Revital was much loved and left behind a painful loving memory. May her memory always be for a blessing.

III-2. PALAEONTOLOGY, ARCHAEOZOOLOGY AND COMPARATIVE OSTEOLOGY COLLECTIONS OF MAMMALS AND BIRDS[1]

Staff
Dr. R. Rabinovich, Curator and Scientific director, <rivka@vms.huji.ac.il>[1]
G. Beiner, Conservator, MA (ACR) (1/2 position)
T. Bar-El, M.Sc., Academic Technician (part-time)

Students
Ph.D. student: R. Biton
T. Steiner,
A. Pakermann,
H. Hauzner

Associated Researchers
Dr. L. K. Horwitz
Dr. I. Zohar

Introduction/General remarks
The Paleobiological collections are a constant source for research for local and foreign students and researchers. Numerous visitors have been using both the Paleobiological and Osteological collections for specific research tasks. Our vision is to continue to be an appropriate host for research to all parties and to attract more Israeli students to the fields of Taxonomy and Paleontology. In most cases, the research in these fields involves the study of the Paleo-collections that are verified or examined against the recent Osteological collections. Our goal of the last two years was to develop a state of the art Herpetological-Osteological comparative collection

The permanent maintenance of the collections is an ongoing process, involving enlarging the existing collections, improving their state of conservation and recording the data. Ph.D. student, R. Biton, and the students: A. Pekerman, H. Hauzner, T. Steiner, are all working in facilitating and improving these scientific collections. In addition to the continuous process of improving the existing collections, we have launched a new project: The first Israeli Paleontological excavation on the site of Ereq el Ahmar. At the site, parts of an early elephant were exposed and brought back to the lab. Excavating such a large specimen is a new challenge we are facing for the first time. Once completed, it will become the only collection in Israel having such unique and valuable materials.

Paleontological collection-Invertebrate Paleontological collection and Vertebrate Paleontological collection

Invertebrate Paleontological collection
Selected collections from the Israeli Geological locations were monitored for further conservation treatment preparing them for modern research aspects.

[1] This report on the Palaeontology, Archaozoology and Comparative Osteology collections Herbarium was written by R. Rabinovich and G. Beiner

Vertebrate Paleontological collection

Our constant involvement in active projects, result in numerous specimens being added to the collections. We tend to augment the collections mainly from material from projects that are part of our research process. For example, the ongoing project on the Late Cretaceous (85 mya- Santonian) in the Arava has added samples of sediments for fossil sorting, comprising numerous vertebrate remains: fish and marine reptiles. These are new in the fossil record of Israel. The project has resulted in a geological systematic sampling of a confined geographical area that is part of a paleoenvironmental study on the Tethys Sea. The Miocene fauna is being catalogued, recording all data available from Miocene localities in Israel preparing new faunal list for future research. This is part of a cooperative project with Dr. Ari Grossman, USA.

Ereq el Ahmar - excavation of the lab team - new elephant material was collected, currently under extensive conservation (Fig.1).

Fig. 1. Ereq el Ahmar elephant excavation, 2013. Each "lump" is a part of the elephant at site.

Nahal Mahanaim Outlet - excavation - a waterlogged Upper Pleistocene archaeological site on the Jordan Valley. The excavation and conservation of the bones is part of a research we launched in conservation of waterlogged bones.

New archaeozoological material from currently excavated sites in Israel are constantly curated at the collection for research. Their material is part of the laboratory's research as well and of the scientific visitors, combining the biological record from the early hominin occupations to the present human made environments.

Osteological Recent Collections

We continued to label, mark and record the specimens in the Osteological collections. Numerous skeletons of the recent fauna (i.e., Rodentia, former Insectivores, Chiroptera) were verified, cleaned and re-labeled. Each bone of each specimen is cleaned and every element is marked and packed in perforated plastic bags with appropriate foam. The data registered with each specimen include information about its geographical collection point, sex, age, and any individual special character. This procedure is essential for collections that serve Taxonomy, Archaeozoology and Paleontology that require exact detailed anatomical features for definition. The inclusion of more herpetofauna specimens to the Osteological collections continues by adding more amphibian and reptile specimens collected by rangers of the Israel Nature and Parks Authority from the Hula Valley. These have been identified by Dr. Boaz Shacham, curator of the Herpetological collection, and are being skeletonized, catalogued, and marked by R. Biton.

The DNA database comprised by Dr. G. Kahila-Bar-Gal is growing. More amphibians and reptiles were included, reflecting the extant fauna of Israel both genetically and morphologically.

Teaching

The collections are a constant part of various courses that are using the space and the specimen for active teaching, to mention just a few: Evolution – Dr. A. Chipman: Biogeography - Introduction to Archaeozoology, Dr. R. Rabinovich. Introduction to Paleontology, Dr. R. Rabinovich. The Geology of the Negev, Prof. A. Agnon.

Public outreach

Visit of ESHMOR workshop M.A. program in Archaeomaterials, Tel Aviv University

Ongoing research:

Paleogeographic reconstruction of Tethys Sea margins during the Santonian age based on Marine reptiles, limestone concretions and unconformities in rocks in the

Menuha formation (Southern Negev)

Dr. Hanan Ginat together with Dr. R. Rabinovich are carrying out a project that combines the geological field observations and the paleontological study of marine reptiles. Vast laboratory preparation is required in order to be able to study the paleontological material. New beds with fossils were discovered and excavated last spring exposing newly vertebrate material. At Menuha Ridge Site 20, portions of a new *Elasmosaurus* sp. skeleton were found within deposits of laminated bio-micritic muddy limestone with thin phosphatic layers (Figs. 2-3).

Fig. 2: Menuha Ridge-Site 20 excavation.

Fig. 3: *Elasmosaurus* sp. vertebra *in situ*.

Miocene fauna – out of Africa and back
Rich vertebrates were exposed from Miocene localities that require re-evaluation and examination. Because of their location these are one of the most important localities of Miocene vertebrates (R. Rabinovich, A. Grossman).

Animal resources and Environment during the Natufian at Eynan, Hula Valley
A group studying the fauna of Eynan site directed by Dr. Anne Bridault (CNRS, France) together with Prof. T. Simmons (UK), Drs R. Rabinovich, I. Zohar and R. Biton are studying animal exploitations modes, hunting and butchery and site formation processes.

Nahal Mahanayim Outlet (NMO) – An open-air Mousterian Site
The ongoing excavations at the open air Mousterian Nahal Mahanayim Outlet by Dr. G. Sharon reveals rich fauna assemblages, studied by R. Rabinovich and R. Biton. Gali Beiner is extensively working on this site because of its water-logged poor condition and on site conservation took place last season.

Early Elephants - Ereq el Ahmar - new excavation exposing elephant remains.

Ongoing research on herpetofauna retrieved from archaeological sites:
Gesher Benot Ya'aqov (GBY), Nahal Mahanayem Outlet (NMO), Ain Mallaha/Eynan, Beisamoun. The research is based on Taxonomic identification of amphibian and reptile species present in the Hula Valley from the Lower Paleolithic to the Neolithic period. Identification is accomplished through referencing to the comparative osteological herpetological collections.

Conservation

In addition to working on projects, we have launched a research program in conservation. For example, we published a paper on the conservation of elephant remains from Revadim Quarry, and presented conservation work done on artifacts from different sites in Israel in the 1st International Conservation Symposium-Workshop on Natural History Collections in Barcelona, Spain. On-site conservation work was performed in the sites of Erq el Ahmar and Nahal Mahanayim in the Jordan River Valley, and finds from both of these sites are currently being treated in the lab.

New materials were purchased with the aim of creating more suitable storage and display mounts for specimens from both the recent (comparative) and the archaeo-zoological collections. Several specimens are already placed in their new mounts, made according to methods learned from the Natural History Museum, London, and the Smithsonian Institute, USA. This year, we also planned and executed the refurbishment of a new state-of-the-art storage room for the Aharoni Collection of mounted bird specimens and continued dealing with the environmental monitoring of all other collection storage rooms. As part of our efforts to improve the collections environment, a pest disinfestations project had been carried out in the mammal and bird collection rooms and new nets were installed on all windows and doors in the mammal and paleontological room.

Visitors and research scholars and their projects

- **Prof. Natalie D. Munro** (Department of Anthropology, University of Connecticut, USA), working with the HUJI collections for the analysis of fauna from ongoing excavations at Nahal Ein Gev II (NEG II) in the Jordan Valley. NEG II is a very late Natufian village site located in the Jordan Valley. In 2013 we completed sorting the material from all previous seasons 2010-2012 and began identification of material from 2012. This work is still in progress.

- **Ashely Petrillo** (Department of Anthropology, University of Connecticut, USA), graduated undergraduate student assistance of recently Prof. Natalie D. Munro.

- Dr**. Gideon Hartman**, Unit 2176, 354 Mansfield Road University of Connecticut, Storrs, CT 06269. is working on the reconstruction of paleoenvironment and dietary adaptation of Neanderthals from Amud cave using the δ15N and δ13C values of bone collagen remains extracted from herbivore bones.

- **Prof. Haskel Greenfield** (Manitoba, Canada), Elizabeth Arnold and Annie Brown, used the collections for the study of the Tel es-Safi EBA zooarchaeological assemblage. They focused mostly on large and medium mammals, but also on birds and fish.

- **Dr. Irit Zohar**, works on the fish osteological collection and analysis of fish remains from: Gesher Benot Ya'aqov (0.8 my); samples of fish remains recovered from 'Ubediya site (1.5 my); samples of fish remain recovered from Epi-paleolithic to Neolithic sites; samples of fish remain recovered from various sites.

- **Dr. Liora Kolska Horwitz** is a visiting scholar at the Collections, she is engaged in ongoing research using the zoological collections. Archaeozoological sites studied in include: Atlit Yam, Munhatta, Beisamoun (old and new excavations), Yiftahel, Abu Ghosh, Kfar HaHoresh; Newe Yam (beach collection), Holyland Tombs, Tel Bet Yerah (early excavations), Ahwat, Tel Beit Shean, City of David, Tell es-Safi/Gath, Hebron (Early Bronze Age), Tel Zahara and Nahal Mishmar Caves.

- **Jackie Meier**, Ph.D student, Department of Anthropology, University of Connecticut, USA.

- **Dr. Ari Grossman**, Associate Professor, Department of Anatomy, Midwestern University, Glendale, AZ 85308.

- **Dr. C. Cope**, California, Various archaeozoological projects.

- **Dr. H. Monchot**, France.

III-4. AQUATIC INVERTEBRATES COLLECTION, WITH THE ARACHNID AND MEDICAL PARASITOLOGICAL COLLECTIONS

by **Dr. A. Chipman.**

Staff

Dr. A.D. Chipman, Director and Curator, ariel.chipman@huji.ac.il, 02-658
Prof. F.D. Por, Director (Emeritus)
Dr. M.N. Ben-Eliahu, Curator and Collection Manager (Emerita)
Ms. T. Bar-El, M.Sc., Academic Technician (part-time)

Field technician: Mr. M. Ben Ze'ev

Student staff: Ms. N. Arazy, Ms. G. Yardeni, Ms. R. Blevis, Ms. N. Blaiberg

Associated Researchers

Dr. Ch. Dimentman (Emeritus), Department of Evolution, Ecology, and Behaviour
Dr. H. Bromley-Schnur, The Entomology Laboratory, Ministry of Health
Dr. M. Tsurnamal (Emeritus)

Activities

Collection organization and cataloguing

- The computerization of the invertebrate collection is almost complete. Several groups that were catalogued within old database systems need to be reviewed. Otherwise only various "odds and ends" remain. The parasitological collections have yet to be catalogued.

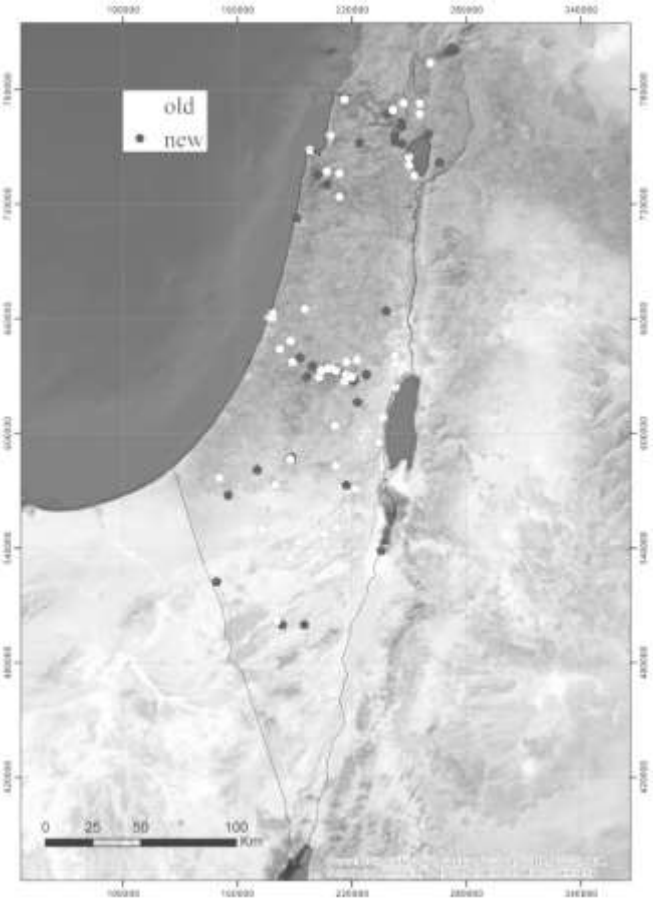
- **Ms. Gil Yardeni** and **Ms. Noa Blaiberg** completed the computerization of the late **Dr. Gershom Levy**'s written catalogues. Checking of the catalogue vs. the actual collection is being done gradually by **Dr. Efrat Gavish-Regev** of the Tel Aviv University collections. Maintenance and administration of the arachnological collection was done by **Dr. Efrat Gavish-Regev.**

- **Ms. Theodora Bar-El** has completed the computerization of the Cnidarians and of minor crustacean groups. **Ms. Rachel Blevis** computerized the tunicate collection.

- **Dr. Nechama Ben Eliahu** and **Dr. Ariel Chipman** are coordinating an ITI (Israel taxonomic initiative) funded project on Serpulidae of the Mediterranean. We have hired a professional diving company for sample collection, and have several samples at different depth profiles from six sites along the Israeli coast. **Dr. Ben-Eliahu** has gone through the samples, identifying species and storing duplicate specimens in 70% and 96% ethanol. The samples in 96% ethanol have been sent to a specialist in Australia, Dr. Elena Kuprianova, for DNA extraction and analysis. Dr. Ben Eliahu has also been studying serpulids encrusting samples of mollusk shells collected by fishermen. These cover depths of 20–40 meters, which are not covered by the systematic coastal survey. In addition, samples of polychaetes forwarded by colleagues are also studied and identified.

- **Dr. Ariel Chipman** continued the research project on sampling and identifying the centipede fauna of Israel. Within the framework of this project,

a field assistant, **Mr. Michael Ben Ze'ev**, has continued sampling all over the country, more than doubling the size of the collection. (see map of collecting sites of centipedes, below).



Physical map of the area under consideration and surrounding with the border of the sampling area marked. Collection sites of published records are marked in white, whereas new sample collection sites are marked in black. A total of 128 new specimens from 35 locations have been examined. We collected by active searching during daytime and night, buy turning over stones and searching leaf litter and soil cracks.

Specimens of two major groups have been sent for identification to experts abroad. The Geophilomorpha were identified by **Dr. Lucio Bonato**, of the University of Padova in Italy, and a paper describing the diversity and biogeography of this group in Israel has been published. The Scolopendromorpha were identified by **Dr. Stylianos Simaiakis** of the Natural History Museum in Crete, who also visited Israel in the spring of 2012. We are starting to understand the diversity of this group, and to understand how several very similar species can be distinguished.

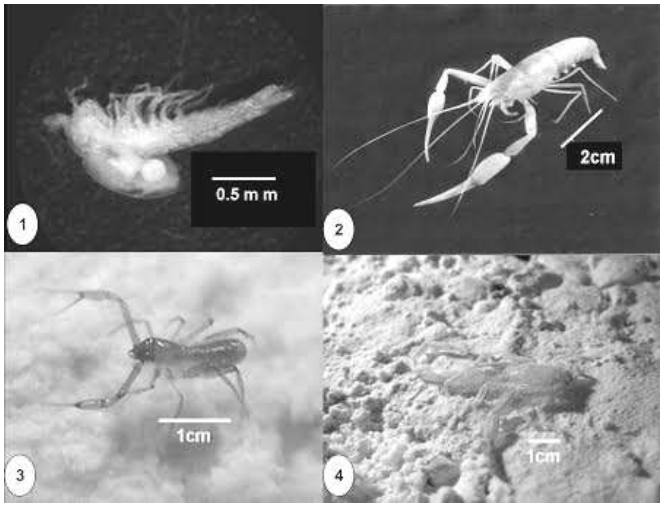
- In addition to the biogeographical analysis, **Dr. Chipman** is preparing a manuscript on the evolution of genome size in centipedes, in collaboration with **Prof. T. Ryan Gregory** from U. Guelph, Canada.
- **Dr. Chipman** is one of the coordinators of the genome sequencing project of the centipede *Strigamia maritima.*

- A third year student, **Ms. Gil Yardeni**, carried out a guided research project under Dr. Chipman's supervision on the biogeography of Israeli Theraphosidae (Aranea).

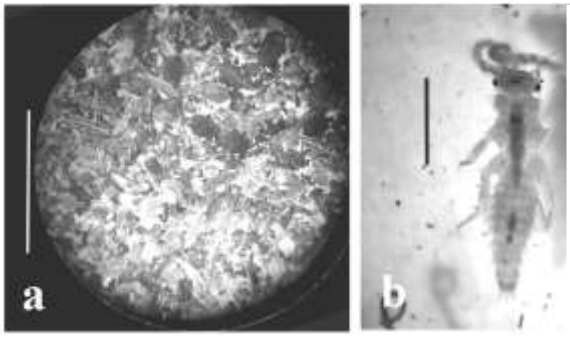
- Research into the evolution of segmentation and body plan generation in arthropods and in other segmented taxa continues in **Dr. Ariel Chipman**'s laboratory.

- **Prof. Dov Por**, President Emeritus of the International Society of Zoological Societies, played an active role in the XXIIth International Congress of Zoology which took place in Israel in 2012. In this framework, he initiated a workshop entitled "The Future of Animal Evolution under the Human Aegis" which was organized and held at the Hebrew University in Jerusalem with the help of Prof. J. Heller and Dr. A Chipman. Besides his own lecture, talks were presented by Drs. A. Minelli. S. Conway Morris, M. Wake and others. In the spring of 2013, at the, Prof. Por presented a seminar lecture in the Department of Ecology, Evolution and Behavior in Jerusalem entitled, "The extremophilic crustacean order of the sulfide shrimp (Thermosbaenacea)". In December 2013, Prof. Por presented an invited lecture at the Life Sciences Institute of the University of Sao Paulo (Brazil) entitled "Subterranean Chemoautotrophic Ecosystems and the Findings of Ayyalon (Israel)". Prof. **Por** continues his interest in the subterranean ecosystem of Ayyalon and its implications. With the publication of *Tethysbaena ophelicola* Wagner 2013, all the 7 macrofaunal species , with the exception of one springtail, have been identified to the species level. New general aspects such as endosymbiosis,interphase hyponeustic life and ovo-viviparity in the sulfidic crusteans are presently being investigated.

A scanning electron micrograph of the cyclopid copepod, *Metacyclops longimaxillis* Defaye & Por 2010, from the Ayyalon cave (micrograph, D. Defaye). Copepoda (in collaboration with Prof. F.D. Por) for which computerized distributional maps are being prepared, and on the Cladocera (in collaboration with Dr. Heather Schnur) for which the fauna is still being monitored.



Some other inhabitants of the Ayyalon cave: 1) *Tethybaena ophelicola*. 2) *Typhlocaris ayyaloni*. 3) *Ayyalonia dimentmani.* 4) *Akrav israchanani.* (Por, Dimentman, Frumkin & Naaman, 2013).



a. Sediments from Agamon haHula.
b. Larva of an ephemeropteran (Baetidae) found on this sediment collected by Idan Barnea project with Ch. Dimentman. Scale: a. 5 mm. b. 1 mm.

Map of sampling sites of Agamon haHula and adjacent water bodies
(Ch. Dimentman and I. Barnea)

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The Parshal West site is located in the running waters of the Jordan Canal. The adjacent site, Parshal East, is an artificial bay of this canal.

The Maagan site is located near the entrance of the Jordan Canal to Agamon haHula. The exist site if located near the water outlet from the Agamon haHula.
The southern pond is fed by the Jordan Canal waters. The northern pond is fed by the southern pond waters.

Dr. Dimentman also contributes specimens to **Dr. Heather Schnur**'s project on the culicid fauna of Israel.

Public outreach and activities

- **Dr. Chipman** served as a board member of the Zoological Society of Israel Until January 2013.
- **Dr. Chipman** gave several talks on arthropod segmentation; at the Society for Integrative and Comparative Biology's annual meeting i n Charleston, South Carolina January 2012, at the European Society for Evolutionary Developmental Biology, in Lisbon July 2012, and at the European Society for Evolutionary Biology, in Lisbon August 2013.
- **Dr. Chipman** taught an undergraduate introductory zoology course, "An introduction to Organismic Biology" – lecture & laboratory), in which he used material from the invertebrate teaching collection.
- **Dr. Chipman** taught a Master's level course, "The Evolution of the Animal Kingdom", in which he used material from the invertebrate collection as well as from the paleontological collection (2013).
- **Dr. Chipman** taught a Master's level course, "Evolution and Development" (2012-2013)
- **Dr. Ben-Eliahu** serves as a member of the Board of Directors of the Tisch Family Zoological Gardens in Jerusalem.
- The collection contributed unusable material to an exhibition in the Science Museum of light and shadows, and material to the Biblical Zoo as part of their preparation for setting up a large aquatic display.
- **Dr. Chipman** was the local host of an ITI funded course on taxonomy of spiders, hosting Prof. Robert Raven from the Queensland Museum (October 2012).
- **Dr. Chipman** participated in the organization of an ITI funded course on scorpion systematics that was held at the Blaustein Center for Desert Research at Sde Boker. The course was given by Prof. Lorenzo Prendini from the American Museum of Natural History. The course relied in part on samples borrowed from the arachnological collection.
- **Dr. Chipman** gave two lectures in University public outreach activities. One in "Lecturers on the bar" in May 2012 and one in "Einstein on Azza" in November 2012.
- **Dr. Ben-Eliahu** gave talks on Lessepsian migrant serpulid tubeworms at the International Zoological Society meeting in Haifa, September 2012, and at the Zoological Society of Israel's annual meeting in Be'er Sheva, December 2012.
- **Dr. Chipman** gave invited seminars at the Center for Genomic Regulation, Barcelona in February 2013 and at the Developmental Biology Colloquium, University of Göttingen in May 2013.
- **Dr. Ben-Eliahu** co-authored a talk on the invasive Lessepsian migrant serpulid tubeworms given , 11th International Polychaete Conference--Australian Museum, Sydney, Australia, August 2013 (oral presentation by **H.A. ten Hove).**

Visitors to the collection

- **Dr. Stylianos Simaiakis** visited the collection in March. He joined Dr. Chipman and Mr. Ben-Ze'ev on a field trip to collect centipedes, and helped identify specimens of the Scolopendromorpha, including teaching us how to identify these species in the future.

- **Prof. Robert Raven** from the Queensland Museum, Australia, visited the arachnid collection, as part of his ITI funded visit to Israel to give a course on spider taxonomy.
- A group of **archeologists from the Israel Antiquities Authority** visited the collections to talk with Dr. Ben-Eliahu about identification of remains of marine animals on archeological samples.
- **Dr. Efrat Gavish-Regev** and her students from the Tel Aviv collections have visited the arachnological collections several times over the year to work on specimens of Lycosidae and Pholcidae.
- **Dr. Sergei Zonstein** from the Tel Aviv collections visited the arachnological collections to look at specimens of Segestridae and Theraphosidae
- **Dr. Kostas Mumcuoglu** of the Hadassah Medical School visited the collection to look at and catalog the acarid collection (ticks).

III-4. THE MOLLUSC AND BRACHIOPOD COLLECTIONS
by Mr. H. K. Mienis

A. THE MOLLUSC COLLECTION

Staff
Prof. J. Heller, Curator Emeritus) <heller(@vms.huji.ac.il>
Mr. H.K. Mienis, Collection manager (part-time) <mienis@netzer.org.il>, tel. 02-6585877) (from abroad 00972–2–6585877)

General remarks
Both Prof. J. Heller and **Mr. H.K. Mienis** are officially retired, however the collection manager continues to work in the collection for several hours twice a week in order to maintain the collection at its current level.

In the wake of the publication dealing with the history of the mollusc collection and the four main collections which over the years were incorporated in the mollusc collection, i.e., those of **Giorgio S. Coen** (Venice), **René Neuville** (Jerusalem), **Dom Maur Massé** and **Arthur Blok** (Rottingdean) in "Haasiana" No. 6, numerous requests were received for copies of that newsletter, loans of material from the **G.S. Coen**-collection and Xerox copies of their articles. As usual, 80 copies of "Haasiana" were mailed to museums and malacological societies abroad. In addition, some 70 extra copies of "Haasiana" were sent out at the requests of various other institutes and private malacologists. Also, quite a number of people were redirected to the electronic version of "Haasiana" on the internet. According to the interest in the "Haasiana" newsletter, it plays an important role in the awareness of the existence of the National Natural History Collections. We continue to receive requests for loans of specific material present in the various collections from colleagues abroad in general but from Italy in particular.

The *Casmaria* samples of species living in the Red Sea which were on loan to a group of Dutch-Belgian malacologists have been returned to the collection and the results of their study have been published in a monograph (see **Buijse, J.A., Dekker, H. and Verbinnen, G.** 2013 in the list of publications). Another team, that of **J.-J. van Poorten and L.J. van Gemert**, from the Netherlands is currently studying the *Frigidocardium*-complex living in the Red Sea. Most probably there are three different species inhabiting the deeper waters of the Gulf of Aqaba. **Prof. R. Bank** from the Netherlands is at the moment revising the status of the land snail *Euchondrus "ovularis"* auct. not Olivier, 1801.

Routine work
Numerous new samples were identified and registered (see under new acquisitions). Updating of the nomenclature of large numbers of samples in the former **G.S. Coen** and **A. Blok** was carried out.

Computerizing the mollusc collection
With the retirement of **Mrs. N. Sivan** in January 2012, the digitalization of the mollusc collection reached a (temporary?) dead end.

Treatment of type material
The separation of type material present in the collections of **Coen** and **Blok** continued at a steady pace. This important work is rather time consuming because all the supposed type samples have to be checked with the original descriptions. Most of these taxa were described in the 19th and the beginning of the 20th Century and the relevant publications are not always available in libraries in Israel. During the years 2012/2013 more than 60 additional types were recognized as being present in the mollusc collection (see separate publication).

New acquisitions
New samples were received for permanent storage in the collection from the following persons:

- **Ch. Dimentman** – Freshwater molluscs from the Hula region.
- **D. Golani** – Marine molluscs from the Eastern Mediterranean.
- **G. Gordon** – Neritidae worldwide.
- **J. Heller** – Land snails and freshwater molluscs from Israel.
- **M. Keppens** – Marine molluscs worldwide.
- **O. Kolodny** – Land snails from Israel.
- **H.K. Mienis** – Molluscs worldwide.
- **A. Shmida** – Land snails from Israel and Jordan.
- **O. Steinitz** – Land snails from Israel.

The Malacological library
The Mollusc Collection continues to receive numerous journals published by similar institutes and Malacological Societies abroad. In return "Haasiana" and/or "Triton", a journal published by the Israel Malacological Society, are sent out in exchange partners. Most of the general journals are now separated from the malacological library and are stored in the Guest and Reading Room (#20). In addition numerous reprints of malacological publications are added annually to the library. Hundreds of books on fossil molluscs were received from the library of the Department of Geology.

Research carried out in the collection
Prof. J. Heller continues to carry out research in the following fields:

- Land snail taxonomy, biogeography and conservation.
- Freshwater snails taxonomy and faunal evolution.
- Molecular mechanisms: stress proteins in land snails.
- An invasive gastropod in Lake Kinneret.

Mr. H.K. Mienis is active in the following fields:

- Taxonomy, nomenclature and distribution of the recent and fossil freshwater and terrestrial molluscs.
- Alien land and freshwater molluscs in Israel and the Netherlands.

- Taxonomy, nomenclature, and distribution of Eastern Mediterranean and Red Sea molluscs.
- Lessepsian migration and settlement of other Indo-Pacific molluscs in the Eastern Mediterranean.
- Shells from numerous excavations carried out in Israel.

Visitors to the collection

- **Mr. V. Avrutis**, Haifa University: identification of shells from the excavation carried out near the Nesher-Ramla Quarry.
- **Dr. E. van den Brink**, Israel Antiquities Authority: identification of shells from Chalcolithic and Early Bronze excavations.
- **Dr. Ch. Dimentman**, Hebrew University: freshwater molluscs from the Hula region.
- **Z. Dvira (Zweig)**, Jerusalem: identifications of molluscs from the Temple Mount.
- **Dr. Y. Edelman-Furstenberg**, Geological Survey of Israel: molluscs from the Eastern Mediterranean
- **Dr. H. Geva**, Israel Exploration Society: identification of shell material from the Jewish Quarter Excavations in the Old City of Jerusalem.
- **Dr. O. Gutfeld**, Israel Antiquities Authority: identification of shell material from the excavation of Bet Loya
- **Dr. E.L. Heiman**, Israel Malacological Society: revision of recent Cypraeidae.
- **Mrs. I. Ktalav**, freelance achaeomalacologist: identification of shells from various excavations.
- **Miss Y. Leshno**, Ben-Gurion University of the Negev and Israel Geological Survey: Mediterranean molluscs taken off Palmahim near the outlet of organic wastes of the Mekorot purification sewage ponds near Rishon LeZiyyon.
- **Mrs. S. Miller**, Hebrew University of Jerusalem: identification of the shells from the Hirshfeld excavation carried out in Tiberias.
- **Mrs. D. Shaked**, Hebrew University and Israel Geological Survey: Miocene molluscs.
- -**B.S. Singer**, Israel Malacological Society: revision of the Mangeliidae from the Gulf of Aqaba.

Giorgio S. Coen: an overlooked description of a new species

Henk K. Mienis

A request by **Dr. F. Crocetta** for the type specimens of two species described by **Giorgio S. Coen** from the "Lago di Paola", i.e., Sabaudia Lake in Italy, led to the discovery of an overlooked description. One species *Mytilodonta paulae* Coen, 1936 was known to me, but a description of *Rissoa (Rissostomia) paulae* already in 1940 formed a complete surprise. It turned out that **Coen** had given a description of that species in a work by **Brunelli and Cannicci** (1940), after it had been mentioned already six years earlier as *Rissoa sabaidiae* Coen in **Brunelli and Cannicci** (1934). But that name lacked a formal description and has therefore to be considered a *nomen nudum.* As a result, the following name has to be added to the list of malacological taxa described by **Coen** (Mienis 2012): ***Rissoa (Rissostomia) paulae* Coen in Brunelli and Cannicci, 1940.** This name replaces *Rissoa paulae* Coen in Brunelli and Cannicci, 1944.

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Coen, G. 1936. *Mytilodonta* nuovo genere di molluschi lamellibranchi. Acta Pontificia Academia Scientiarum Novorum Lyncaeorum, Civitate Vaticana, 88 (Suppl.): 298-301, 1 pl.

Mienis, H.K. 2012. 1b. Four important contributed mollusc collections – their histories and contents. 1. **Giorgio S. Coen** (1873-1951) and his mollusk collection. Haasiana, 6: 11-37.

René Neuville: an overlooked eponym

Henk K. Mienis

In my brief report concerning **René Neuville** (1899-1952) and his shell collection (Mienis, 2012), I overlooked that **Dr. Nathan Shalem** (1897-1959) had named a Cretaceous gastropod from Syria after him (**Shalem** 1937). Eponym i.e. scientific name dedicated to **René Neuville**: *Cerithium neuvillei* Shalem, 1937.

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Monitoring the invasion of the Eastern Mediterranean by Lessepsian and other Indo-Pacific molluscs (continuation)

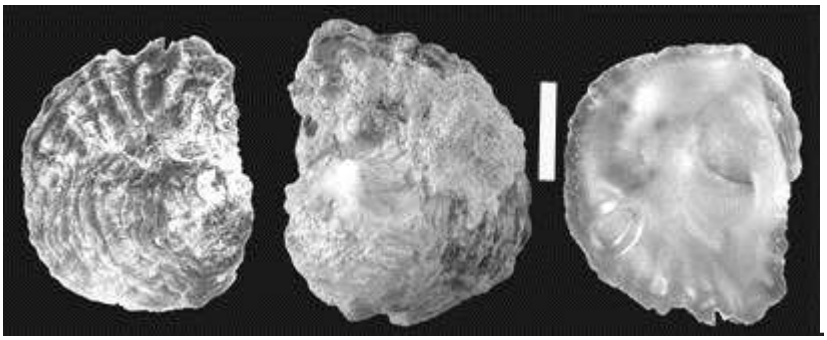
Henk K. Mienis

Three species can be added to the growing list of Lessepsian migrants occurring along the Mediterranean coast of Israel: *Pseudorhaphitoma iodolabiata*, *Alectryonella plicatula* and *Mimachlamys sanguinea*. The presence of two other species: *Septifer forskali* Dunker, 1855 and *Alectryonella crenulifera* (Sowerby, 1871), that had been previously recorded in small numbers from the Levant Sea off the coast of Israel, was confirmed by numerous recent records (Mienis, et al. 2012a).

Gastropoda
Family Mangeliidae
***Pseudorhaphitoma iodolabiata* (Hornung & Mermod, 1928)**

A single not fully grown living specimen was reported by **Bogi and Galil** (2012) as *Pseudorhaphitoma* cf. *iodolabiata* from off Haifa. Almost at the same time **Öztürk** (2012) mentioned a similar juvenile shell from Iskenderun Bay, Turkey. In the meantime the first adult shell was also found in Iskenderun Bay (**Öztürk and Bitlis-Bakir** 2013), which confirms the presence of this species from the Red Sea in the Levant Sea.

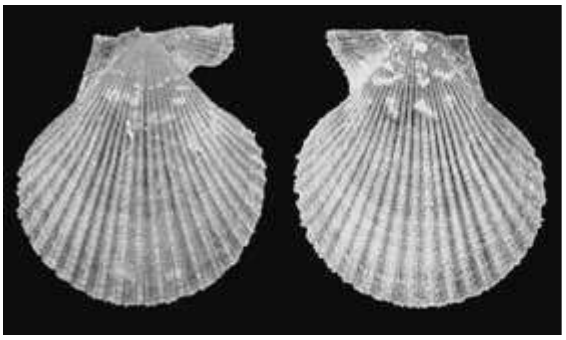
Bivalvia
Family Ostreidae
***Alectryonella plicatula* (Gmelin, 1791)**



The Indo-Pacific oyster, *Alectryonella plicatula* was recorded from Shiqmona already in 2005 (**Mienis** *et al.* 2012b). Scale, 1 cm

It was also collected from Palmahim, in close proximity to *Mimachlamys sanguinea.*

Family Pectinidae
***Mimachlamys sanguinea* (Linnaeus, 1758)**



Living specimens of the scallop *Mimachlamys sanguinea* were either collected or photographed near Ashdod and Palmahim in 2011 (**Shefer** *et al*., 2012).

Scale, 1 cm

This bright red species has also turned up elsewhere along the Mediterranean coast of Israel in small numbers in 2012 and 2013..

References

Bogi, C. & Galil, B.S. 2012. First record of *Pseudorhaphitoma* cf. *iodolabiata* (Hornung & Mermod, 1928) (Mollusca; Gastropoda; Mangeliidae) off the Mediterranean coast of Israel, BioInvasions Records, 1(1), 33-35.

Mienis, H.K., Ben-David Zaslow, R. and Rittner, O. 2012a**.** First records of *Alectryonella plicatula* from the Mediterranean coast of Israel (Mollusca, Bivalvia, Ostreidae). Triton, 26: 4-5.

Mienis, H.K., Rittner, O., Rilov, G. and Almog O. 2012. Some additional records of two hardly known Lessepsian migrants among the molluscs from the Mediterranean coast of Israel. Triton, 26: 1-3.

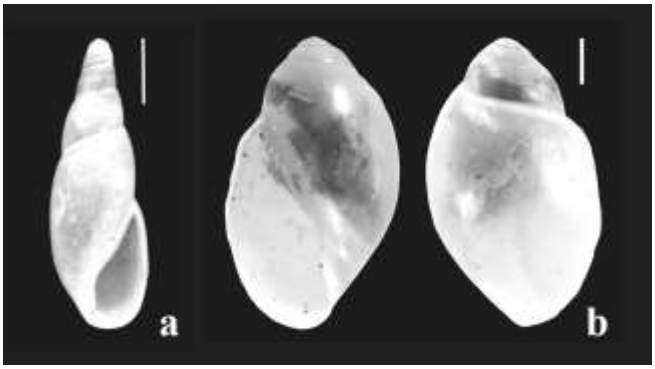
Öztürk, B. 2012. A new alien gastropod *Pseudorhaphitoma iodolabiata* (Hornung & Mermod, 1928) (Mangeliidae, Mollusca) in the Mediterranean Sea. Mediterranean Marine Science, 13 (1): 5-7).

Öztürk, B. and Bitlis-Bakir, **B.** 2013. An additional note on the presence of *Pseudorhaphitoma iodolabiata* (Mollusca:Gastropoda:Mangeliidae) in the Mediterranean Sea. Triton, 28: 6-7.

Shefer, S., Feldstein, T., Mienis, H.K., Rittner, O. and Gur, A. 2012. First records of *Mimachlamys sanguinea* (Linnaeus, 1758) from the Mediterranean coast of Israel (Bivalvia, Pectinidae). Triton, 25: 1-2.

A first record of both a land- and freshwater snail for the fauna of Israel
Henk K. Mienis

In the last two years, two inland gastropods have been recorded for the first time from Israel: a land snail (a) *Cecilioides tumulorum*, and a freshwater snail (b) *Physa fontinalis*. For both species, the nearest locality is Turkey



a. The land snail, *Cecilioides tumulorum* (Bourguignat, 1856).
b. The freshwater snail, *Physa fontinalis* (Linnaeus, 1758)

Scale. 1 mm.

Gastropoda
Family Physidae
Physa fontinalis (Linnaeus, 1758)
A single specimen was collected by I. Barnea on 29 April 2012 in the Ma'agan of Agamon HaHula, Upper Galilee. The shell of this common European species differs from that of the extremely common species in Israel, by its blunt apex and much lower spire. The from the invasive North-American species *Haitia acuta* (Draparnaud, 1805), an nearest locality of *Physa fontinalis* is in Turkey from where it is known to occur among others in the Central Anatolian and Mediterranean regions (**Yildirim** *et al.* 2006). The preferred biotope of *Physa fontinalis* consists of standing water with rich submerged vegetation.

True species belonging to the genus *Physa* have never been collected in a recent or fossil form in Israel. There are at least three possibilities for its sudden appearance in Agamon HaHula:

- It was introduced by means of infected aquatic plants
- Some one emptied the contents of an aquarium in the lake;
- It arrived at the site as a hitchhiker on aquatic birds like ducks or waders.

Family Ferussaciidae
Cecilioides tumulorum (Bourguignat, 1856)
A single well preserved specimen was found in nest cleanings of an unidentified Harvest ant species near Moshav Newe Ativ, Mount Hermon by H.K. Mienis on 15 December (**Mienis** *et al.* 2012). The shell had a height of 5 mm. This is the first time that this species of SE-European origin (Greece, Turkey, Cyprus and some of the Aegean Islands) is recorded from Israel. On Mount Hermon several other typical European species have been collected like *Carychium minimum* Müller, 1774, *Lauria cylindracea* (da Costa, 1778) and *Pyramidella pusilla* (Vallot, 1801). All these species are on Mount Hermon at the border of their natural distribution. Like all other species belonging to the Ferusaciidae, it is subterranean. Such species are only occasionally collected by turning stones or by sieving the earth of the "hillocks" produced by Palestine Mole rats (*Spalax*), however the best way to get large samples of subterranean molluscs is to ask archeologists to use the flotation method while sieving

the debris from their excavations. All these methods have hardly been employed so far on Mount Hermon.

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Acknowledgements

Thanks are due to my colleague Dr. Chanan Dimentman (Hebrew University of Jerusalem) for regularly forwarding me the material collected in the Agamon HaHula area during the past 20 years, and to my colleague Mr. Oz Rittner (Tel Aviv University) for making the excellent photographs.

List of Additional Type Specimens Deposited or Located in the National Mollusc Collection of the Hebrew University of Jerusalem

Henk K. Mienis

During the years 2012/3 type material belonging to another 60 taxa have been located or lodged permanently in the National Mollusc Collection[1].

GASTROPODA

Trochidae

***Gibbula barbara* Monterosato, 1884**

Syntype: HUJ 22527 (=Blok 8360). Costa di Barberia.

***Jujubinus delpreteanus* Sulliotti, 1888**

Syntypes: HUJ 20750/18 (=Coen 6531). Italy, Sicily, Faro di Messina.
Remark: Most of the shells are rather damaged.

***Solariella iridifulgens* Melvill, 1910**

Syntype: HUJ 22529 (=Blok 9348). Off Charbar, at 40 fathoms depth.

Pomatiidae

***Otopoma clathratulum* var. *minor* Godwin-Austen, 1881**

Syntype: HUJ 21681 (=Blok 9852). Socotra.

***Otopoma complanatum* Godwin-Austen, 1881**

Syntype: HUJ 21684 (=Blok 8875A). Socostra, coastal plain.

***Otopoma hinduorum* Blanford, 1864**

Syntype: HUJ 21682 (=Blok 9853A). India, Kattiawar.

Cyclophoridae

***Alycaeus crispatus* Godwin-Austen, 1871**

Syntypes: HUJ 22521/2 (=Blok 8953). India, Khasi Hells, Khasia.

[1] For previous lists of types in the Mollusc Collection, see Haasiana nos. 2 (2004), 3 (2006), 4 (2008), 5 (2010) and 6 (2012).

***Alycaeus damsangensis* Godwin-Austen, 1886**

Syntypes: HUJ 22449/6 (=Blok 8950). Western Bhutan Hills, Damsang Peak.

***Alycaeus (Pincerna) liratula* Preston, 1907**
Syntype: HUJ 22445 (=Blok 8265). Ke-lan-tan.

***Alycaeus pusillus* Godwin-Austen, 1871**
Syntypes: HUJ 22450 (=Blok 9001). India, Kopili River, banks.

Diplommatinidae
***Diancta diepenheimi* Preston, 1913**
Syntypes: HUJ 22446/2 (=Blok 9043). Indonesia, Beilan Beilan Islet, north off Great Obi.

***Diplommatina frumentum* Preston, 1914**
Syntypes: HUJ 22444/2 (=Blok 9006). India, Assam, Naga Hills.

***Diplommatina homeii* Godwin-Austen, 1876**
Syntypes: HUJ 22522/2 (=Blok 9008). India. Assam, Dafla Hills, Shengorh Peak.

Rissoidae
***Rissoa (Rissostomia) paulae* Coen, 1940**
Holotype: HUJ 53487 (=Coen 9652). Italy, Lago di Paula.

Columbellidae
***Columbella doriae* Issel, 1866 (1865?)**
Syntypes: HUJ 22343/2 (=Coen 9048). Bender-Abbas (=Iran, Bandar-e 'Abbas).
Remark: The original work was published in 1866, the reprint, with separate page numbers but the same plate numbers, was dated 1865!

Nassariidae
***Nassa deshayesiana* Issel, 1866 (1865?)**
Syntype: HUJ 22342 (=Coen 9140). Isola d'Ormus (=Iran, Hormoz Island).
Remark: The original work was published in 1866, the reprint, with separate page numbers but the same plate numbers, was dated 1865!

***Nassarius jeanmartini* Kool & Dekker, 2006**
Paratype: HUJ 22341. Reunion, west coast, Baie de St. Paul.

***Nassarius zanzibarensis* Kool & Dekker, 2007**
Paratypes: HUJ 22340/2. Tanzania, Zanzibar, east coast, Uroa, Tamarind Beach Hotel.

Conidae
***Conus (Chelyconus) mediterraneus* var. *producta* Coen, 1933**
Holotype: HUJ 53800 (=Coen 7935b). Dalmatia.
Paratype: HUJ 53801 (=Coen 7935b). Dalmatia.
***Conus mediterraneus* var. *trunculus* Coen, 1933**
Syntypes: HUJ 53799 (=Coen 7934). Isola Tremiti.

***Conus (Chelyconus) mediterraneus* var. *turrita* Coen, 1933**
Holotype: HUJ 53802 (=Coen 10378). Dalmatia.

Drillidae
***Drillia sejuncta* var. *opima* Brugnone, 1880**
Syntypes: HUJ 20670/2 (=Coen unnumbered). Italy, Babbaurra, Pliocene.

Mangeliidae
***Eucithara gevahi* Singer, 2012**

Holotype: HUJ 40834. Israel, Gulf of Aqaba, Elat, small boat horbour, south of oil terminal.

Ringiculidae
***Ringicula leptocheila* Brugnone, 1873**
Syntypes: HUJ20747/2 (=Coen 9111 part). Italy, Ficarazzi, Pleistocene.

Pyramidellidae
***Eulimella curtata* Coen, 1933**
Holotype: HUJ 20847 (=Coen, 7331). Italy, Venice, Lido.

***Eulimella flagellum* Coen, 1933**
Holotype: HUJ 20848 (=Coen 7333). Italy, Venice, Lido.

***Odostomia litoris* Coen, 1933**
Lectotype: HUJ 20846 (=Coen 7311). Italy, Venice, Lido.
Paralectotypes: HUJ 53797/2 (=Coen 7311). Italy, Venice, Lido.
***Pyrgulina alabastrum* Coen, 1933**
Holotype: HUJ 53786 (=Coen 7320). Italy, Venice, Lido.

***Pyrgulina brevicula* var. *rejecta* Coen, 1933**
Lectotype: HUJ 53779 (=Coen 7326). Italy, Venice, Lido.
Paralectotypes: HUJ 53780/3 (=Coen 7326). Italy, Venic, Lido.

***Pyrgulina canaliculata* Coen, 1933**
Holotype: HUJ 53794 (=Coen 7328). Italy, Venice, Lido.

***Pyrgulina coeni* Coen, 1933**
Lectotype: HUJ 53787 (=Coen 7322). Italy, Venice, Lido.
Paralectotype: HUJ 53788 (=Coen 7322). Italy, Venice, Lido.

***Pyrgulina cylindrica* Coen, 1933**
Lectotype: HUJ 53784 (=Coen 7327). Italy, Venice, Lido.
Paralectotype: HUJ 53785 (=Coen 7327). Italy, Venice, Lido.

***Pyrgulina denticulus* Coen, 1933**
Lectotype: HUJ 53792 (=Coen 7318). Italy, Venice, Lido.
Paralectotypes: HUJ 53793/9 (=Coen 7318). Italy, Venice, Lido.

***Pyrgulina intermixta* Coen, 1933**
Lectotype: HUJ 53795 (=Coen 7319). Italy, Venice, Lido.
Paralectotype: HUJ 53796 (=Coen 7319). Italy, Venice, Lido.

***Pyrgulina mitis* Coen, 1933**
Lectotype: HUJ 53789 (=Coen 7329). Italy, Venice, Lido.
Paralectotypes: HUJ 53790/3 (=Coen 7329). Italy, Venice, Lido.

***Pyrgulina ordita* Coen, 1933**
Holotype: HUJ 53783 (=Coen 7321). Italy, Venice, Lido.

***Pyrgulina pyrgulella* Coen, 1933**
Holotype: HUJ 53791 (=Coen 7323). Italy, Venice, Lido.

***Pyrgulina vixstriata* Coen, 1933**
Lectotype: HUJ 53781 (=Coen 7324). Italy, Venice, Lido.
Paralectotypes: HUJ 53782/2 (=Coen, 7324). Italy, Venice, Lido.

***Tiberia (Tiberiella) pretiosa* Coen, 1933**

Holotype: HUJ 53798 (=Coen 7301). Italy, Venice, Lido.

Planorbidae
***Planorbis meridaensis* Preston, 1907**
Syntypes: HUJ 20767: 2 (=Blok 1605). Venezuela, Merida.

Lymnaeidae
***Semisoluta subsoluta* Coen, 1949**
Holotype: HUJ 30747. Unknown [Rhodes, Pliocene, Levantine layers].
Paratype: HUJ 20765. Unknown [Rhodes, Pliocene, Levantine layers].

***Soluta persoluta* Coen, 1949**
Holotype: HUJ 30748. Unknown [Rhodes, Pliocene, Levantine layers].

Enidae
***Spelaeoconcha paganettii* Sturany, 1901**
Syntype: HUJ 20749/1 (=Coen 1104). Croatia, Curzola (=Korčula) Island, in cave near Curzola.

Clausiliidae
***Clausilia medlycotti* Tristram, 1865**
Paratypes: HUJ 53592 (=ex Trenchman in Blok). Lebanon, Surafand (Sarepta).

***Clausilia virgata* var. *tabarkana* Pallary, 1927**
Paratypes: HUJ 52278/2. Morocco, Ile de Tabarka.

Oxychilidae
***Vitrea hibernica* Kennard, 1907**
Syntypes: HUJ 20769/7. Ireland, Co. Antrim, Murlough Bay.
Remark: Although described in the genus *Vitrea*, now family Pristilomatidae, it is clearly an *Oxychilus* species, family Oxychilidae.

***Vitrea rogersi* Woodward, 1903**
Syntypes: HUJ 20770/5. England, Cheshire, Marple Wood.
Remark: Although described as a *Vitrea* species, it is without doubt an *Oxychilus.*

Dorcasidae
***Trigonephrus latezonatus* Connolly, 1929**
Paratypes: HUJ 3859/2 (=Blok 10502). South Africa, Van Rhynsdorp.

Urocoptidae
***Urocoptis delectabilis florenciana* Pilsbry, 1929**
Paratypes: HUJ 20768/3 (=Blok 3889A). Cuba, south slope of ridge north of Florencia, on large rocks in humid forest near the summit of the ridge.
Remark: This taxon had been mentioned and figured but not described several months earlier by **Pilsbry** (1928: 80) as *Urocoptis delectabilis florentiana* (sic!) in the text, and correctly as *Urocoptis delectabilis florenciana* on plate 5, fig. 9.

***Urocoptis livida atkinsi* de la Torre & Clench, 1930**
Paratypes: HUJ 22526/2 (=Blok 10121). Cuba, Cienfuegos, Central Soledad, Vilches Potrero.

Streptaxidae
***Ennea copiosa* Preston, 1913**

Syntypes: HUJ 22525/2 (=Blok 12189). British East Africa, Urguess.

***Ennea rectangularis* Preston, 1913**
Syntypes: HUJ 22523/3 (=Blok 12187). British East Africa, Urguess.

***Ennea woodhousei* Preston, 1913**
Syntypes: HUJ 22524/4 (=Blok 12190). Uganda, Mount Elgon.

Limacidae (?)
***Palizzolia monterosati* Bourguignat, 1877**
Syntype: HUJ 20748 (=Coen 85). Italy, Sicily, Calatafimi, Palermo.
Remark: Internal shell only.

Corillidae
***Plectopylis bavayi* Gude, 1901**
Paratype: HUJ 20766 (=Blok 9772). Tonkin, That Khé.
Hygromiidae
***Xerophila boiteli* Pallary, 1920**
Syntype: HUJ 22447 (=Blok 10905). Morocco, Ksabi.

***Xerophila boiteli* var. *depressa* Pallary, 1927**
Syntype: HUJ 22448. Morocco, Missour.

Helicidae
Helix (Erctella) costae var. ex forma *intorta* Monterosato, 1894
Syntype: HUJ 53706 (=ex Monterosato in Coen 6160). Italy, Sicily.

BIVALVIA
Mytilidae
***Mytilodonta paulae* Coen, 1936**
Holotype: HUJ 53488 (=Coen 10634a). Italy, Lago di Paula.
Paratype(s): HUJ 53489/fragments (=Coen 10634b). Italy, Lago di Paula.

Pectinidae
***Pecten (Chlamys) farreri* Jones & Preston, 1904**
Syntypes: HUJ 22333/2 (=Blok 10178). China, Shantung, Shi Tao.

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B. THE BRACHIOPOD COLLECTION
by Mr. H. K. Mienis

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General remarks
The brachiopods or lamp shells form today a relatively small independent phylum among the invertebrates: the Brachiopoda. In the past, they were considered to be molluscs because of their bivalve shells A typical brachiopod is stationary on a stalk-like pedicle (arm) which projects from an opening in the upper ventral or pedicle valve. The lower dorsal or brachial valve is usually somewhat smaller and lacks a hole. Within the systematics of invertebrates, the Brachiopoda are more related to the

Bryozoa and Phoronida, than to the Mollusca. Yet most 18th to early 20th Century books dealing with marine molluscs contain also some information concerning brachiopods. This also explains the frequent presence of brachiopods in old mollusc collections.

A check of the various components of the Mollusc collection of the National Natural History Collections of the Hebrew University of Jerusalem revealed some 355 samples of brachiopods as follows:

- The **Giorgio S. Coen** collection numbering about 230 samples including some type material.
- The **Arthur Blok** collection, 65 samples.
- The local Mediterranean and Red Sea collections, some 60 samples.

This material will be revised, catalogued and arranged in a single Brachiopod collection in the near future. Since 80% of the samples form part of collections which had been donated to the Mollusc collection under the condition that the material will not be dispersed, the Brachiopod collection will maintain the status of an independent unit within the Mollusc collection. The Brachiopod collection is accompanied by a small but important library dealing with the phylum Brachiopoda.

An updated checklist of the Brachiopoda present in the Eastern Mediterranean off Israel
by Mr. H. K. Mienis

Scarce information has been published about the brachiopods living in the Eastern Mediterranean, i.e., the Levantine Sea, off the coast of Israel. The following list is based on records in the literature (**Logan** 1979; **Brunton** 1989; **Logan** *et al.* 2002; **Logan** *et al.* 2004) and still unpublished studies of material present in the National Natural History Collections of the Hebrew University of Jerusalem and the Steinhardt National Collections of Natural History of the Tel Aviv University.

Phylum BRACHIOPODA
Class CRANIATA
Family Craniidae
Genus *Novocrania* Lee & Brunton, 2001
Novocrania anomala (Müller, 1776)
Novocrania turbinata (Poli, 1795)

Class RHYNCHONELLATA
Terebratulidae
Genus *Gryphus* Mühlfeldt, 1811
***Gryphus vitreus* (von Born, 1778)**

Family Megathyrididae
Genus *Argyrotheca* Dall, 1900
Argyrotheca cistellula (Searles-Wood, 1841)
Argyrotheca cuneata (Risso, 1826)

Genus *Joania* Alvarez, Brunton & Long, 2008
Joania cordata (Risso, 1826)

Genus *Megathiris* d'Orbigny, 1847
07-*Megathiris detruncata* (Gmelin, 1791)

Family Kraussinidae
Genus *Megerlia* King, 1850
***Megerlia truncata* (Linnaeus, 1767)**
***Megerlia monstruosa* Scacchi, 1838**

It appears that at least nine species are living in the Israeli part of the Mediterranean Sea. However we may not rule out the possibility that 2–3 additional species known from other areas in the Eastern Mediterranean might also occur in our region.

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Types of Brachiopoda in the collection of the National Natural History Collections of the Hebrew University of Jerusalem

by Mr. H. K. Mienis

A brief study of possible type specimens of Brachiopods in the former Mollusc Collection of Giorgio S. Coen has revealed three type samples.

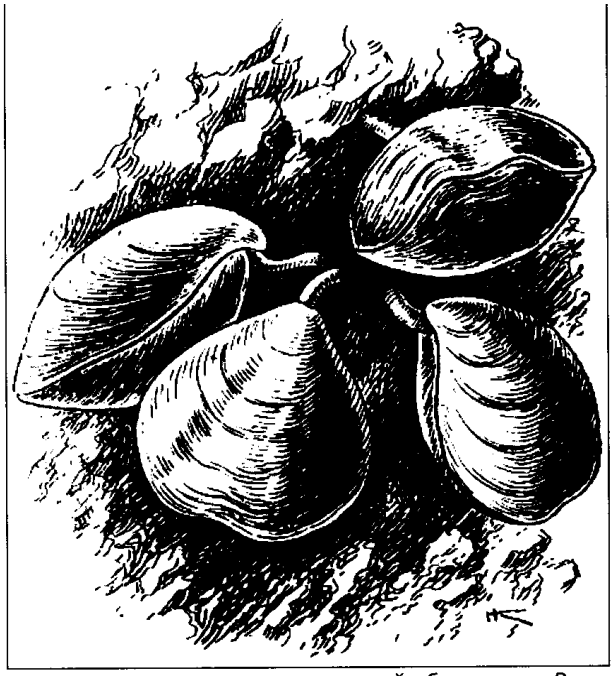
RHYNCHONELLATA
Megathyrididae
***Cistella rostrata* Coen, 1933**
Syntypes: HUJ 0161/3 (= Coen 10069). Italy, Puntebianche.

***Cistella cordata* var. *flexuosa* Monterosato, 1884**
Syntypes: HUJ 0162/2 (=Coen 10045a). France, Corsica.
Family status still uncertain.

***Terebratula capsula* Jeffreys, 1859**
Syntypes: HUJ 0163/2 (=Coen 10030b). Northern Ireland, off Larne.
Remark: Current status: *Gwynia capsula* (Jeffreys, 1859)

Terebratella (Magasella) sanguinea (Leach, 1814) from New Zealand. (height 37 mm)

(



Brachiopods in situ. (after old. Russian textbook).

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caption

III-5. THE FISH COLLECTION
by Dr. Daniel Golani

Staff
Dr. Daniel Golani, Curator and Director, dani.golani@mail.huji.ac.il

Description of the Hebrew University Fish Collection
The Hebrew University Fish Collection is the most extensive and comprehensive collection of fish specimens in the entire Middle East. Located in the Edmond J. Safra Campus in Givat Ram, Jerusalem, it contains the richest compilation of fish specimens from the Red Sea and the Eastern Mediterranean Sea. Both regions are of vital importance for research in ichthyology, zoogeography, marine biology and biodiversity. The Red Sea was the first tropical region to be studied intensively by ichthyologists in modern times, from the 18th century onwards. In the 21st century, the Hebrew University Fish Collection staff led international research projects, concentrating on the fascinating phenomenon of Lessepsian migration of fishes and other fauna from the Red Sea via the Suez Canal into the Mediterranean.

The Hebrew University Fish Collection was founded in the early 20th century by **Prof. I. Aharoni** (1882–1946); subsequent Heads of the Collection were **H. Steinitz (from 1948-1971), A. Ben-Tuvia** (1971-1999) and (presently) **D. Golani. (since 1999)** The Fish Collection contains more than 100,000 specimens from over 22,000 lots, including the holotypes and paratypes of more than 100 species. The collection data have been computerized and the file is accessible in an online database. Most of the specimens, from Red Sea, Mediterranean and other locations, are preserved in 70% ethanol, while some specimens are preserved dry.

Recently the Fish Collection has been enlarged to include the collection of fish tissues preserved in alcohol; their voucher specimens have also been preserved and are available for molecular research. Several hundreds of tissue samples have been preserved and are the basis of a large number of scientific publications. These published research studies on tissues complement the hundreds of publications based on specimens preserved in the Hebrew University Fish Collection, including several books and monographs.

Research projects and collaborations
- Participation in a research group conducting molecular study of several Mediterranean and Indo-Pacific populations of the Lessepsian migrants *Pomadasys stridens* and *Plotosus lineatus* (led by **Dr. G. Bernardi**, University of California, Santa Cruz). A manuscript on the ongoing study of the Lessepsian migrant, *Fistularia commersonii,* was accepted for publication (see list of publications). This research is enhanced by molecular studies that provide an advanced approach to research on the colonization dispersal of invading species.
- Participation in the program of genetic barcoding of the Israeli ichthyofauna, led by **Prof. B. Rinkevich** of the Israel Oceanographic and Limnological Research Institute. The goal of this program is to characterize the fish of the marine and freshwaters of Israel genetically.

- Participation in a genetic study comparing aquaculture escapees to native Mediterranean *Sparus aurata* with **Dr. Y. Tikochinski** of the Maritime College, Michmoret, and **Prof. Y. Zohar**, University of Maryland.

- Study with **Dr. Y. Tikochinski** of the Maritime College, Michmoret, on various populations of the Silver sillago, *Sillago sihama*, that was previously believed to be a single species with a very wide distribution range from Taiwan, Hong Kong, southern and northern Red Sea that had migrated into the Mediterranean via the Suez Canal (Lessepsian migrant). However, the results have been surprising: it appears that the southern Red Sea population belongs to a different species than that found in the Mediterranean. In addition, the Mediterranean population shows a very strong bottleneck effect: all 44 examined specimens belonging to a single haplotype; this study has been accepted for publication (see below). Another study with **Dr. Y. Tikochinski** on the Lessepsian migrant, *Saurida undosquamis*, is almost completed. This species was also considered as having a wide Indo-Pacific distribution; however, our results revealed that the Red Sea population represents a separate species that may have been previously undescribed. An additional joint study with **Dr. Y. Tikochinski** is of the Sea of Galilee (Lake Kinneret) population of the Silver carp *Hypophthalmichtys molitrix* . This fish species is stocked annually in Lake Kinneret. There have been those who argued that the local Silver carp population includes hybrids and therefore needs to be examined genetically.

- Participation in a study describing a new species of lizardfish from the Red Sea and the Mediterranean with **Prof. Barry Russell** of the University of Darwin, Australia.

- The Hebrew University Fish Collection has continued to serve a central role in research on the Mediterranean and Red Sea ichthyofauna. Brief publications are continuously published with the cooperation and participation of **Dr. O. Sonin** and **Mr. P. Salameh** of the Fishery Department of the Israeli Ministry of Agriculture, **Dr. D. Edelist** of Haifa University and **Mr. Y. Levy** of the Nature Protection Authority.

- There had been ongoing cooperation with the late **Prof. Lev Fishelson** of Tel Aviv University and **Prof. Ariel Diamant** of the Israel Oceanographic and Limnological Research, Eilat on the oral cavity of members of families Kyphosidae and Girellidae which has been accepted for publication.

- The collaboration in classical taxonomy studies with **Dr. R. Fricke** of the Staatliches Museum für Naturkunde, Stuttgart, Germany, is continuing. Papers describing new species from the Red Sea and a first record from the Mediterranean, by **Fricke, Golani and B. Appelbaum-Golani**, have been accepted for publication.

- **Dr. D. Golani** continues to serve as coeditor with **Dr. M. N. Ben-Eliahu** of the biennial newsletter of the National Natural History Collection of the Hebrew University, *Haasiana*, of which no. 7 is currently being compiled and edited.

Participation in scientific conferences:

- **Dr. Daniel Golani** presented a paper at the 9th Indo-Pacific Conference in Okinawa, Japan, 24-28 June, 2013.

- **Dr. D. Golani** participated in the conference on Mediterranean Marine Biodiversity in View of Climate Change and Invasion of Alien Species (invited lecture) in Heraklion, Crete, Greece, 7-9 October, 2013.

- **Dr Daniel Golani** presented, as Head of the Exotic Fish Team, a lecture at the 40th Commission International pour l'exploration Scientifique de la Méditerranée (CIESM) Congress, Marseille, France, 27 October-1 November, 2013.

Grants

- The impact of Mariculture on the natural populations of *Sparus aurata* in the Mediterranean and the Red Sea. Yad Hanadiv (with **Prof. Y. Zohar**, Department of Marine Biotechnology(UMBC) and Dr.Y. Tikochinsky, Ruppin Academic Center). .
- Survey of the exotic fish species in the freshwater ecosystem of Israel. The Fishery Department, Ministry of Agriculture. (with **N. Foierman** and **A. Geva**, Fishery Department). .
- Seasonality growth and mortality in native and Lessepsian Mediterranean fish. The Fishery Department, Ministry of Agriculture. (with Dr. J. Balmaker, Tel Aviv University and Dr. M. Kiflwai, Be'er Sheva University)

Visitors to the HUJ Fish Collection in 2012–2013

- **Mr. O. Gon** of the South African Institute for Aquatic Biodiversity (SAIAB), Grahamstown, S.A.
- **Dr. R. Fricke**, Staatliches Museum für Naturkunde, Stuttgart, Germany.
- **Dr. W. White**, CSIRO, Tasmania, Australia.
- **Dr. A. Baranes**, Interuniversity Institute for Marine Science, Eilat.
- **Dr. M. Goren**, Tel Aviv University.
- **Dr. A. Diamant**, Israel Oceanographic & Limnological Research National Center for Mariculture, Eilat.
- **Dr. N. Stambler**, Bar-Ilan University.
- **Mr. H. Neuberger**, Fishery Department, Ministry of Agriculture
- **Mr. S. Halil**, Fishery Department, Ministry of Agriculture.
- **Ms. Y. Lewitt**, Tel-Aviv University.
- **Mr. N. Stern**, Tel Aviv University.
- Ms. A. Barash, Haifa University

PROPOSED DEVELOPMENT PLANS FOR 2013/2014

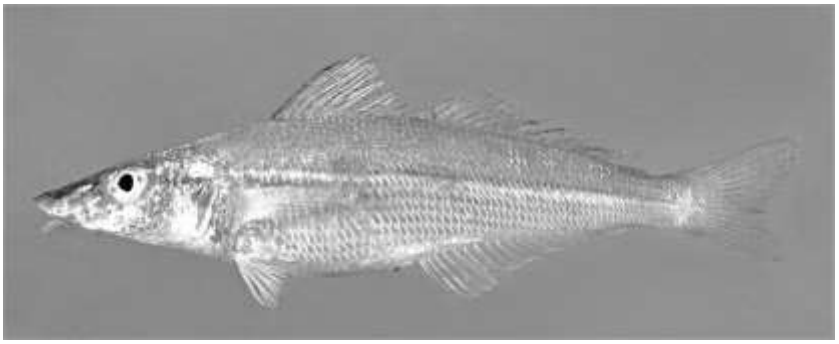
In addition to the ongoing development of computerization, including the Collections Website, and safety and health precautions, there are two other main topics that should receive attention and funding:

- Allocations for expeditions, especially deepwater expeditions, the ichthyofauna of which are still not completely known in our region. .
- Allocations for the establishment of a collection or collections of tissues, preserved in alcohol, for future molecular research, which is in the vanguard of taxonomic and

systematic research. In order to achieve this goal, D. Golani has already begun collecting and storing fish tissues in alcohol, which will serve as the seed collection of a comprehensive collection for future research. .

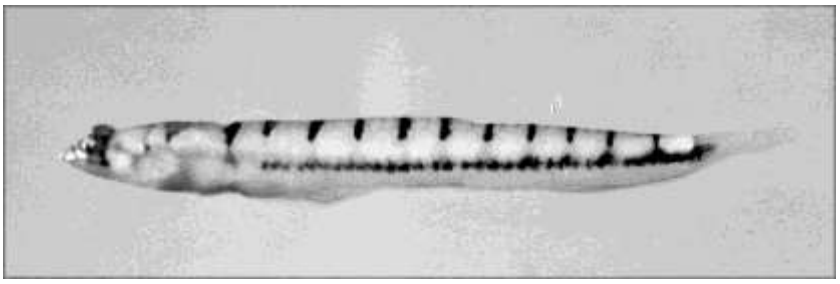
Four species from the Red Sea and the Mediterranean were described as new to science.

The common Lessepsian migrant *Sillago* (Family Sillaginidae) was distinguished from *Sillago sihama* (previously considered the identical species).



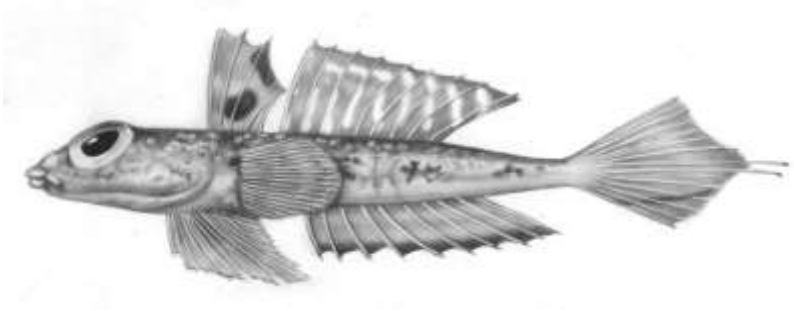
A paratype of *Sillago* sp. nov. paratype HUJ-12360, `164 mm SL, 8 May, 1987. Acre.

The new sand diver *Limnichthys marisrubri* Fricke and Golani 2012 was described from Elat. Family Creediidae. The small sand diver was described based on 21 specimens, all collected in shallow (0.5-1.5 m) sandy shore, at the northern beach of Elat (Fricke and Golani, 2012).



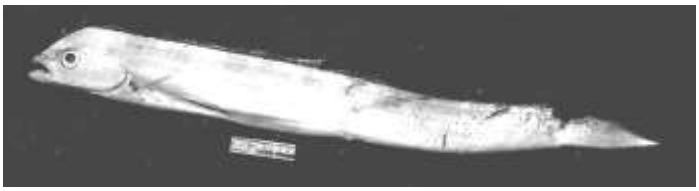
Paratype of *Limnichthys marisrubri*, 22.1 mm SL, 29 March 2011, HUJ 20066.

A new dragonet, *Callinymus profundus* Fricke and Golani, 2013 was described from deep water of the Gulf of Aqaba. Family Callionymida-



The specimen, 65.1 mm SL (HUJ 16989) was collected at a depth of 410-480 m on a soft substrate on 11 February 1992 (Fricke and Golani, 2013). It was previously misidentified as *Callionymus bentuviai.*

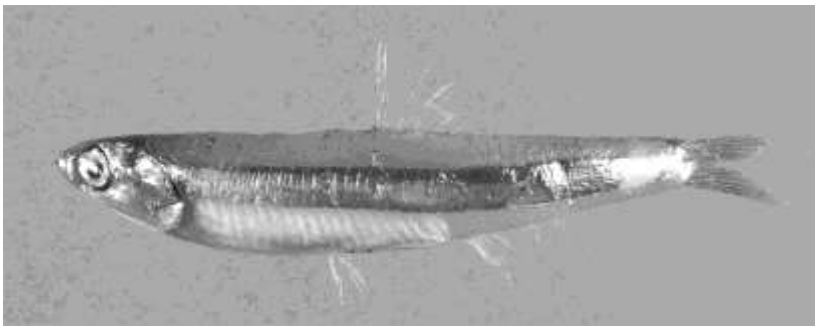
A new cutlassfish *Evoxymetapon* sp. nov. was described from Elat Family Trichuridae.



This new species was described based on a single specimen of 830 mm SL (HUJ 20198). It was found dead offshore south of Elat at 5 m.

First record of Red Sea species from the Mediterranean

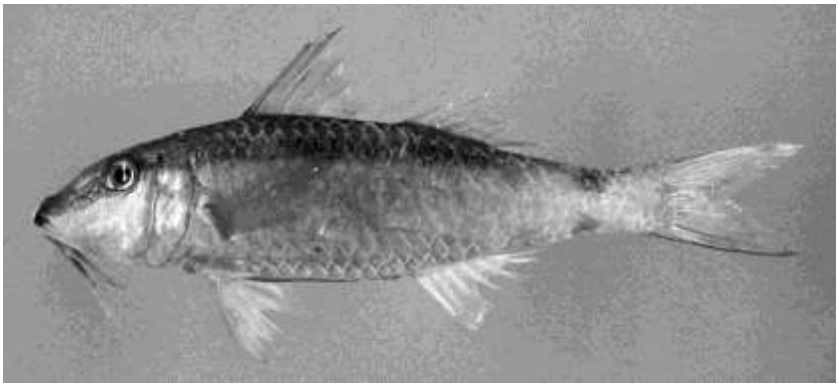
The Indian Ocean anchovy, *Stolepherus insularis* Hardenberg, 1933, a new Lessepsian migrant was recorded for the first time in the Mediterranean. Family Engraulidae. The specimens were from a trawl catch between Ga'ash and Jaffa dated 7 August, 2009. This species is not rare in the Mediterranean and apparently was overlooked in the past. (Fricke *et al.* 2013)



Two specimens (HUJ 20145) of the Golden or Hardenberg's anchovy, ***Stolepherus insularis*** were collected from a depth of 42 m

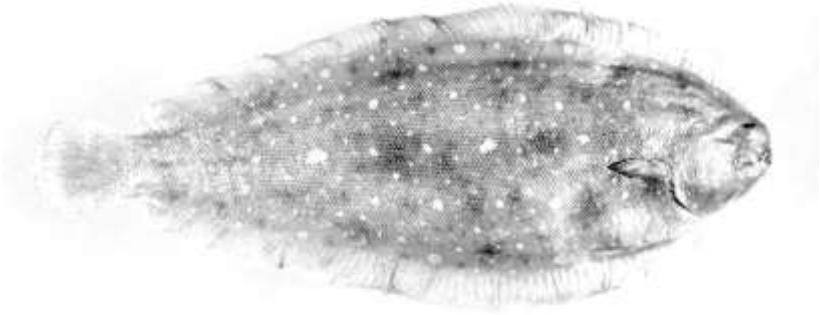
Two new records from the Mediterranean coast of Israel

The Red Sea goatfish *Parupeneus forsskali* (Foumanoir and Guézé, 1976) Family: Mullidae.



The specimen (HUJ 20165) was collected on 24 January 2013 from trawl catch at depth of 45 m at the southern edge of Haifa Bay (Sonin *et al.* 2013).

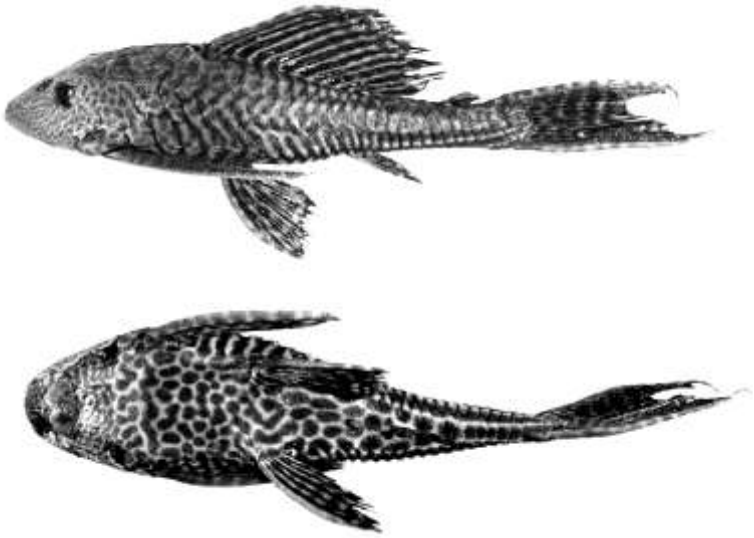
The Atlantic originated Senegalese sole, *Solea senegalensis* Kaup, 1858
Family Soleidae



Three specimens (HUJ 20200) were collected on 17 May 2013 in Jaffa market and apparently were part of local trawl catch. (Golani *et al.* 2013).

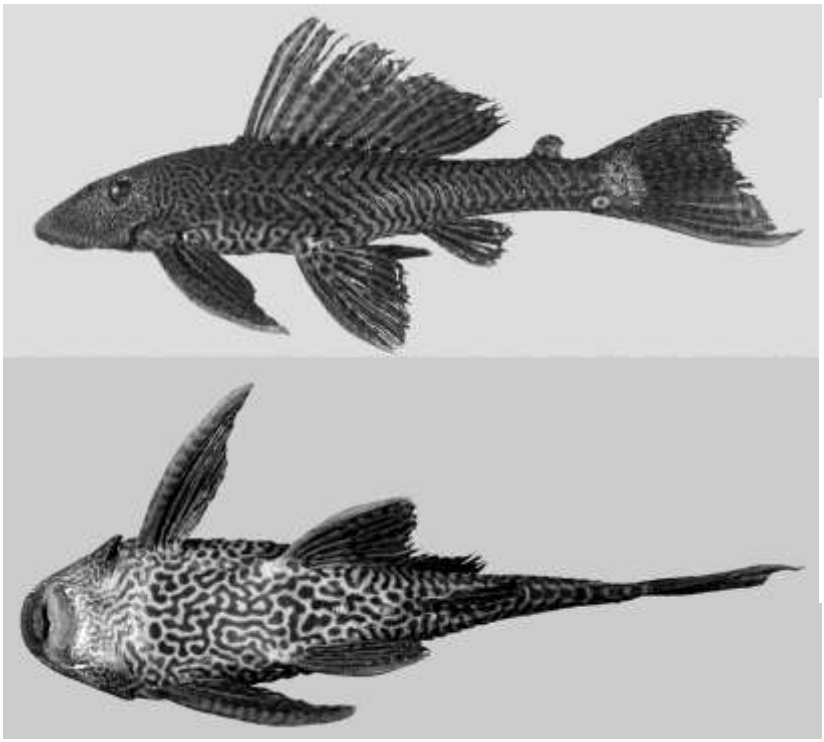
Three new exotic fishes from the inland waters of Israel.

Two large species of Suckermouth catfishes, *Pterygoplichthys pardalis* (Castelnau, 1858) were collected from the inland water of Israel. Family Loricaridae.



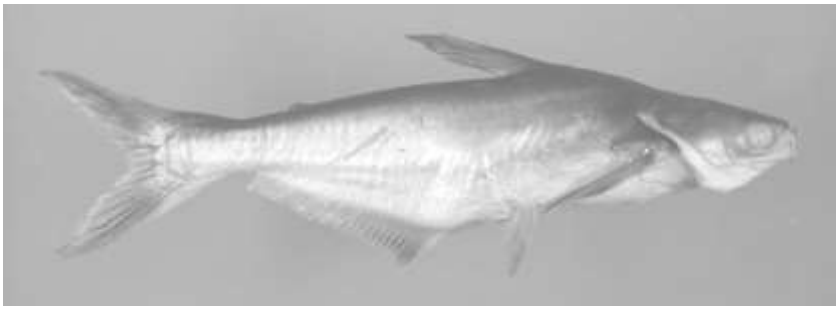
Two specimens of *Pterygoplichthys pardalis* (Castelnau, 1858) (HUJ 20156 and 20166) were collected on 30 May 2012 at Nahal Amal, Nir David and on 16 January 2013 at the southern coast of Lake Kinneret (Golani and Snovsky, 2013

A single specimen of *Pterygoplichthys disjuctivus* (Weber, 1991) collected from Nahal Amal, Nir David.



The specimen of *Pterygoplichthys disjuctivus* (HUJ 20054) was collected on 4 April 2011 with an experimental beach seine in Nahal Amal, Nir David (Golani and Snovsky, 2013).

A single large specimen of *Pangasius hypophthalmus* (Sauvage, 1878) was recorded from Lake Kinneret. Family Pangasiidae.

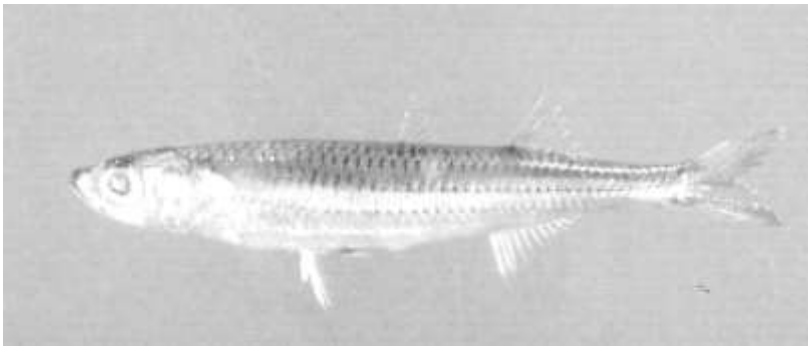


The specimen, 276 mm SL (HUJ 20124) was caught in Lake Kinneret on 16 January 2013 by fisherman using a comercial trammel net.

Two fish named in honor of Dr. Daniel Golani

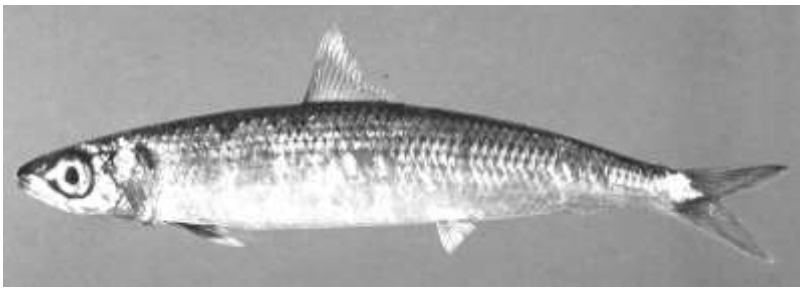
In appreciation of the achievements and contributions in international ichthyofaunal research of **Dr. D. Golani**, two fish species have been named after him:

- ***Hypoatherina golanii* Sasaki and Kimura**, 2013. Family Atherinidae.



A specimen of *Hypoatherina golanii* from the northern beach of Elat

Holotype of *Etrumeus golanii* DiBatistta, Randall and Bowen 2013, Family Clupeidae.



Holotype of *Etrumeus golanii*, (HUJ 18423), 213 mm SL, 22 June 1999, Limassol, Cyprus

Dr. D. Golani showing specimens from the fish collection.

III-7. THE HERPETOLOGY COLLECTION – AMPHIBIANS AND REPTILES [1]

Staff

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Prof. Y.L. Werner Curator (Emeritus), <yehudahw@vms.huji.ac.il>
Dr. B. Shacham, Collection Manager, <boazshacham@mail.huji.ac.il>

Associated Researcher

Prof. H. Seligmann

General information and collection holdings

The Herpetology Collection comprises just over 23,400 catalogued specimens of amphibians and reptiles from all over the world. Most of the specimens in the collection are from Israel and Sinai. The collection is considered the most extensive regional record of Levant taxa. The major part of the inventory (ca. 85%) is stored in methylated ethanol; the minor part consists of stuffed or dry specimens, skeletons, and skins. Since the early 1990s, several hundred tissue samples from fresh specimens have been preserved separately and stored in absolute ethanol for future DNA analysis. Several hundred uncatalogued items (shed skins, faeces, shells of reptile eggs, fragments of animals, and donated specimens waiting to be catalogued) are also included in the collection.

This collection is a much-used research tool. The specimens, which are individually tagged with the main collection data, are assembled in jars with the list of specimen numbers. Specimens too large for storage in glass jars are stored in large tanks (100 litre volume) equipped with wheels, which are stowed under the collection shelves and rolled out for inspection or maintenance. The HUJ Herpetological Collection is the most comprehensive collection of Israeli herpetofauna in existence.

Note: In the 5th *Haasina* report (2010) the history and list of type in the Herpetology were prepared by Y.L Werner and B. Shacham, respectively.

Activities

- **Computerization of the Herpetology Collection.**
  The collection is almost fully catalogued by hand (hardcopy). Of the slightly more than 23,400 herpetological specimens in the collection, about 99% of the records have been digitized. These are currently being verified and corrected prior to uploading the computerized catalogue to the National Natural History Collections of the Hebrew University Hebrew website. In the past, approx. 2,500 catalogue items from the Herpetology Collection data were integrated into the BioGIS project, a web-based application for public access to the scientific databases (botanical and zoological) of Israel (see website: www.biogis.huji.ac.il).

- **Tissue samples for genomic analysis.**
  In addition to the tissues for genetic analysis collected in recent years from voucher specimens, the collection houses dozens of new tissue samples from an ongoing field study in the Nizzanim sand dunes, southern coastal Israel. The samples are from toe clippings of lizards captured and released as

[1] This report on the Herpetology Collection was written by **Dr. B. Shacham.**

part of the Ph.D. study of **Dr. B. Shacham,** begun in mid-2004, under the supervision of Prof. A. Bouskila, Ben-Gurion University of the Negev. The remains collected as part of this study and subsequent similar samples are deposited in the herpetology collection.

- **Collaboration with local and international research.**
  The herpetological collection cooperates and collaborates with researchers and institutions seeking material for morphological and genetic studies. Material from the collection is either shipped on loan or examined *in situ* by visiting researchers. Often these efforts result in scientific publications which include results derived from HUJ specimens.

- **Comparative herpetological material.**
  The herpetology collection is cooperating with the archaeozoological collection (**Dr. R. Rabinovich,** Curator), in building a comprehensive comparative osteological collection of Recent amphibian and reptile species from Israel and its environs to assist with the identification of animal remains from archaeological sites. For this purpose, dozens of suitable specimens have been transferred (on permanent loan) to the archaeozoological collection. This is an ongoing project.

Sources of new material in the Herpetology Collection

For several years, the collection has reduced the number of new accessions from deliberate collecting in the field. Most new material, approximately 250–300 specimens each year, is obtained through donations from various sources:

- Local donations from the Israel Herpetological Information Center (IHIC) of the Society for the Protection of Nature in Israel (SPNI); park rangers of the Israel Nature and Parks Authority (INPA); students; and the general public. The majority of this material consists of roadkill collected at random.

- Local field surveys and projects that involve collection of remains of animals (e.g., animals that fell into the pitfall traps of the Nizzanim Sand Dune Management Project, collected by **Dr. Shacham** and colleagues since 2004).

- Researchers, private breeders, and enthusiasts outside Israel.

News from the Herpetological Collection

Upwards of 400 new specimens were absorbed and catalogued in the Herpetological Collection since the previous instalment of this publication (Haasiana 6). Of these, it is noteworthy to mention many dozens of specimens collected by select individuals, whose contributions are much obliged: **Roy Talbi** (INPA), **Itay Tesler** ("Negev Zoo", Beer Sheva zoological center), **Tzoor Magen** (Dept. EEB, HUJ), **Gil Ben Ezra** (INPA), **Talya Oron** (INPA), **Oren Kolodny** (Tel Aviv University), and **Gal Vine** (INPA). Most of the specimens are collected as roadkill or found dead in pits or water cisterns, and supply a plethora of geographical and morphological data, as well as potential for DNA sampling.

Projects using the Herpetology Collection

Projects of research students

- **G. Sion,** Ph.D. student. Advisors: **Profs Y.L. Werner** and **U. Motro.**
  The thesis, "Directional asymmetry and decision making in the gecko *Ptyodactylus guttatus*", addresses the ecological behaviour of the gecko *Ptyodactylus guttatus*, including morphological variables. Recent studies link minor directional asymmetry (DA) with fitness because tail injury correlates with minor DA in assorted characters within taxa of Lepidosauria. The present study is consistent with these findings. It differs from previous studies by observing live animals in their natural habitat (rather than only measuring preserved specimens), thus adding a new behavioural angle. We link minor shifts in bilateral asymmetry of eye diameter with behavioural patterns such as dominance behaviour and foraging risk-taking strategy using the gecko, *Ptyodactylus guttatus,* as a model animal. Interestingly, this study is consistent with recent findings on the link between dominance and risk-taking tendencies of humans and brain laterality. Further study on the lizard brain could unravel whether the similarity is more than mere coincidence or derived from a joint evolutionary process. [Currently in last phase of writing]

- **Identification key for snake remains (Dr. Boaz Shacham** and **Rebecca Biton,** and side project with **G. Friedemann).** Identifying reptiles to a specific or at least a generic level is important for various fields of science, especially archaeozoological reconstruction of faunas as well as for ecological and inventory studies of modern fauna. As part of **R. Biton**'s Ph.D. project (archaeozoology laboratory, supervised by **Dr. R. Rabinovich), Dr. B. Shacham** and **R. Biton** are constructing a key for identifying modern snake remains, mainly from skeletons. This effort also includes collaboration with **Guilad Friedemann**, a Ph.D. student at Tel Aviv University, with the key enabling identification of reptile remains (skeletons and skins from pellets) collected by him from nesting sites of raptors in the Judean mountains and lowlands.

Additional projects using the Herpetology Collection

- **Physiological aspects of micro-evolution in Israeli fan-toed geckos, genus *Ptyodactylus*, in relation to body size.** Body size is a key factor in the life history and physiology of animals. When the specimens used in physiological experiments are preserved, the relationship between performance and size can be investigated long after the physiological research has been completed. The auditory acuity of three species of *Ptyodactylus* geckos was tested electro-physiologically to determine whether the ear is tuned to hear conspecific calls better than heterospecific ones. Although the results indicated a negative answer, they also confirmed that auditory sensitivity improves with increased size, as found previously. Since we also consider the effects of temperature on auditory sensitivity, we are presently exploring the effects of size on preferred body temperature. From theory and one report, the auditory sensitivity should be lower and is predicted to be lower in smaller individuals or species. **(Prof. Y.L. Werner** and **A. Goldenzweig,** student assistant).

- **Speciation of the house gecko, *Hemidactylus turcicus,* in Israel and Sinai.** The common house gecko of Israel, which occurs throughout the country on buildings, rocks, and trees (they show slight differences between

them), is traditionally considered as the circum-Mediterranean species *Hemidactylus turcicus*. A pholidosis difference between northern and southern Israel has been known to us for decades. Recently, Baha El Din described *H. mindiae* from the south Sinai mountains; afterwards, it was reported by Amr et al. from southern Jordan (Wadi Ram). Now, Moravec et al. (2011) have carried out a genomic analysis for *Hemidactylus* in the Middle East (excluding Israel) and split the species into several species, so which species are actually present in Israel? Our biometry database of some hundreds of geckos revealed that cluster analysis is needed for defining populations and identifying them. Preparations for carrying out this analysis are now underway **(Prof. Y.L. Werner and O. Gajst**, student assistant).

Example of *Hemidactylus turcicus*, southern Judean Lowlands, 2 April 2009. One of the current projects explores taxonomy of geckos currently assigned to this taxon in Israel. Photo: Boaz Shacham

- Sexual dimorphism in snakes with emphasis on eye size (**Prof. Y.L. Werner** with **Dr**. **G. Babocsay** (Budapest), **R. Faiman** (Parasitology), **E. Razzetti** (Pavia), and **Dr. H. Seligmann**).
- Morphological and genetic variation in sand-dwelling reptiles along an eco-geographic gradient in Israel (**Drs. B. Shacham** and **G. Kahila Bar-Gal**).

Public outreach and activities

- **Tours of the collection**. The Herpetology Collection participates in the Nature Park & Galleries project, offering limited guided tours of the collection. There tours, which are limited to a maximum of 15–20 participants at a time, depending on group demographics, usually last 35–60 minutes. The Collection occasionally hosts similar tours at specific request, usually mediated by the HUJ public relations and spokesperson office. The Collection Manager, the Professor Emeritus or guest researchers guide these tours, depending on their availability. The collection also serves as a platform for specific seminars for the student guides of the Nature Park & Galleries, providing the guides with a basic herpetological background and help with guided projects.
- **Educational outreach by the collection.** The Collection assists concerned members of the public by identifying reptiles, particularly snakes, and educating about them. There has been a slow but steady increase in the number of young herpetologists from various Near East countries, including Iran, who consult the collection staff (mainly by e-mail) or request data.

- **Contribution of collection materials to museum exhibits**. The Collection contributes occasionally, through temporary loan of specimens, to exhibits at external museums on demand. For instance, for the exhibit "Games in Light and Shadow" at the Bloomfield Science Museum, Jerusalem.

Participation in scientific workshops and meetings

- **Seligmann, H.** 2013. Mitochondrial tetragenes: Overlapping genes coded by tetracodons. Mathematical and statistical Models for Genetic Coding, Mannheim, Germany, September 26-28, 2013.
- **Shacham, B., Levi, S.** and **Levy, A**. 2012. Reptiles in the heart of metropolitan Dan area: Herpetofaunal survey of Ariel Sharon Park. The 49th Meeting of the Zoological Society of Israel, Beer Sheva, Israel, December 9, 2012 (lecture, **B. Shacham,** presenter). Abstracts (in Hebrew).
- **Shacham, B.**, **Cohen, O., Malihi, Y.**, **Ferro, U., Manor, R.** and **Bar, P.** 2013. Response of rodents and reptiles to eradication of invasive *Acacia saligna* trees in coastal sands, Israel. The 50th Meeting of the Zoological Society of Israel, Tel Aviv, Israel, December 1, 2013 (lecture, **B. Shacham,** presenter). Abstracts (in Hebrew).
- **Rotem, G., Giladi, I., Gavish, Y., Shacham, B. Bouskila, A.** and **Ziv, Y.** 2013. Combined effect of climatic gradient and grazing on herpetofaunal assemblages in a heterogenic agro-ecological system. The 41st Meeting of the Israel Society of Ecology and Environmental Sciences (ISEES), Rehovot, Israel, October 9, 2013 (lecture, **Rotem, G.**, presenter). Abstracts: http://isees.org.il/ConvHTML/2013/ISEES2013_abstracts.pdf.
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- **Werner, Y.L.**, **Ben-Zvi, G., Bogaerts, S., Bouskila, A., Inbar, E., Levanony, T., Naor, A., Olek, Y., Talbi, R. & Wilén, M.** 2012. "Toes-up" in Sinai agamas: what for? The 49th Meeting of the Zoological Society of Israel, Beer Sheva, Israel, December 9, 2012 (poster, **Y.L. Werner,** presenter). Abstracts (in Hebrew).

Visitors to the collection since 2012

- **Guilad Friedemann**, Department of Zoology, University of Tel Aviv, Israel

Ablepharus rueppellii adult Jerusalem Mountains, 25 April 2012. An extension of its geographic range in Israel has been published recently. Photo: Boaz Shacham (Roll et al 2013).

Example of roadkill collected and donated to the HUJ-R collection recently: juvenile *Malpolon monspessulanus* from northern Judean Lowlands, 17 November 2012 (HUJR-22107, voucher specimen). Photo: Boaz Shacham.

Rebecca Biton and Dr. Boaz Shacham tagging and preparing frozen specimens before processing for either the comparative or the herpetology collections. Photo: Boaz Shacham.

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